ENGINEERING NEWS-RECORD

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It rains in Churubusco, too!

As in every community, Churubusco, Indiana, has to drain storm water and sanitary sewage. In 1937 they installed a combined sewer outfall. Part of the line was Armco PAVED-INVERT Pipe.

When inspected in 1950 the Armco PAVED-INVERT Pipe showed no evidence of deterioration despite having carried highly erosive effluent. In contrast other material installed at the same time was severely eroded.

This is a graphic example of why Armco engineers developed PAVED-INVERT Pipe more than 25 years ago. It means balanced design that provides extra protection where the wear is greatest—is added assurance of obtaining full value from your drainage investment.

Providing better products to meet specific needs has been standard practice at Armco for more than 40 years. A few examples are FLEX-BEAM Guardrail, PIPE-ARCH, STEELOX Buildings and sturdy MULTI-PLATE Bridges.

Today you can bring your drainage and construction problems to Armco with full assurance you will receive all the benefits of long experience, extensive research facilities, and a real interest in helping you solve these problems.

Armco has a complete range of engineered products and convenient, authoritative data to help you. If your problem is difficult or unusual, why not talk it over with us?

ARMCO

ARMCO DRAINAGE & METAL PRODUCTS, INC.

MIDDLETOWN, OHIO • OFFICES AND PLANTS IN PRINCIPAL CITIES

SUBSIDIARY OF ARMCO STEEL CORPORATION

Structural Plate Pipe and Arches ★ Corrugated Metal Pipe ★ Welded Steel Pipe
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B.F.Goodrich

Pick your toughest hauling job— hand it to these tires

ROSCOE KREAGER, Supt., right above, watches a loading operation at the quarry of the Woodville Lime Products Company at Woodville, Ohio. Here, Mr. Kreager sees a giant crane dump a bucket of limestone into a trailer equipped with B. F. Goodrich Universals. This is a year-round operation at Woodville as the company processes limestone, fertilizers and other kindred products for nation-wide sales.

Some thirty vehicles are used by this company for intraplant stone hauling. According to Kreager, BFG Universals are used on all of these vehicles, and the company is well pleased with the performance of the B. F. Goodrich tires on these vehicles. Subjected to exceptionally hard wear, they travel over stone and razor-sharp rocks with equal traction in forward or reverse gears because they are nondirectional!

B. F. Goodrich Universal tires were selected on the basis of service and quality. These tires have greater bruise resistance and greater ability to absorb and withstand shocks because they're built with the patented *nylon shock shield*. Strong, protective layers of nylon are built in between the tread rubber and the cord body of all BFG tires of 8 or more plies . . . and at no additional cost to you.

There's a special B. F. Goodrich tire for every off-the-road service. See your local dealer. Let him help you get the benefits of longer tire life and lower operating overhead. *The B. F. Goodrich Company, Akron, Ohio.*

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Whether the need is a simple staff gage, float gage or complex remote operated recorder, there is a STEVENS instrument to meet the requirement. STEVENS recorders give automatic registration of water levels or liquid flow for daily, weekly or longer periods of unattended operation; automatic control of alarms or pumps; direct float operation or remotely controlled operation.

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A MUST FOR YOUR REFERENCE FILES

Puts interpretive data at your fingertips. Contains information on float wells and instrument shelters. Complete hydraulic tables. Information on STEVENS water measuring instruments.

Inquiries regarding special liquid measurement or control problems are invited.

LEUPOLD & STEVENS INSTRUMENTS, INC.

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ENGINEERING NEWS-RECORD

Member ABC

Volume 147 SEPTEMBER 13, 1951 No. 11

WALDO G. BOWMAN
Editor

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ROBERT F. BOGER
Publisher

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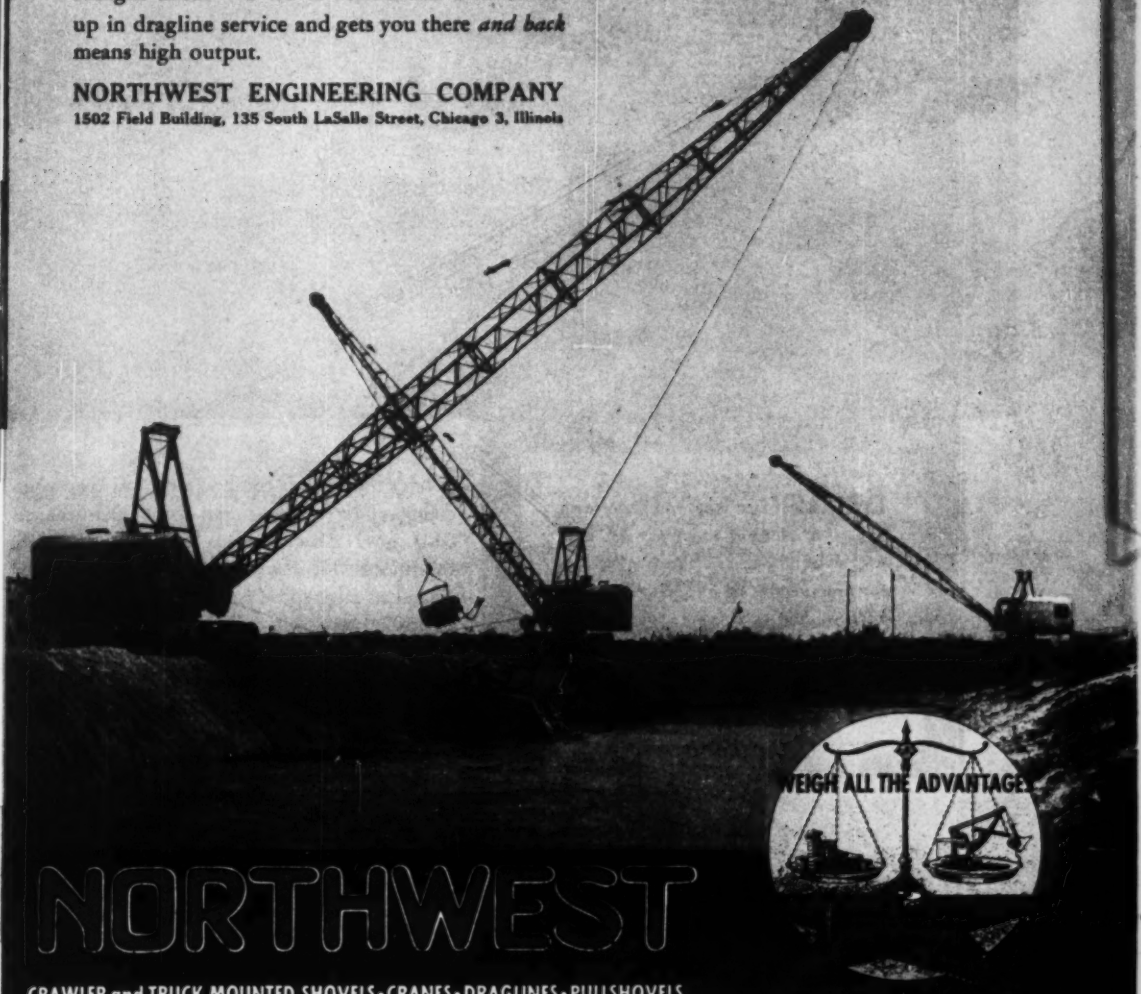

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A Texaco Lubrication Engineer will gladly help you select the one proper Texaco air compressor oil to assure you greater efficiency and lower costs under your particular operating conditions. And don't forget to ask him about the Texaco Simplified Lubrication Plan for *all* your equipment. Just call the nearest of the more than 2,000 Texaco Distributing Plants in the 48 States, or write:

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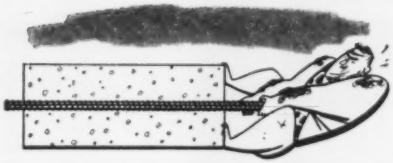
FOR ALL CONTRACTORS' EQUIPMENT

Advantages offered by Inland HI•BOND since 1943 now officially recognized by American Concrete Institute

At the annual convention of the American Concrete Institute in 1949, Committee 208 on Bond Stress proposed changes in design stresses for concrete reinforcing bars. These proposals were made after Bureau of Standards tests proved that certain "improved" reinforcing bars could live up to higher standards.

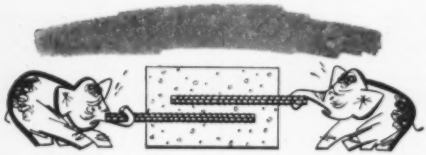
At the 1950 convention, the ACI Building Codes Committee adopted the proposals of Committee 208. And in February 1951, the Institute officially accepted the new building code change.

It is interesting to note that Inland HI-BOND has, for eight years, offered all advantages of higher bonding properties now officially recognized by ACI.



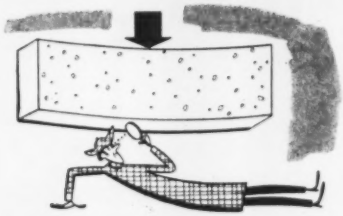
1 Increased bond stresses and greater resistance to slip

See reports on National Bureau of Standards research by Arthur Clark . . . ACI Proceedings, Vol. 43, p. 381; Vol. 44, p. 437; Vol. 46, p. 161; by C. C. Fishburn . . . ACI Proceedings, Vol. 44, p. 289.



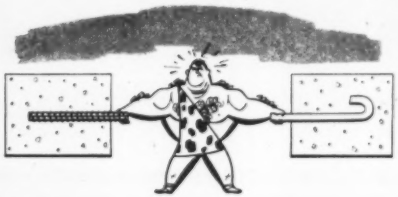
2 Increased efficiency at splices

See reports on National Bureau of Standards research by Ralph W. Kulge and E. C. Tuma . . . ACI Proceedings, Vol. 42, p. 13.



3 Reduced width of tensile cracks

See reports on National Bureau of Standards research by David Watstein and Norman Seese, Jr. . . . ACI Proceedings, Vol. 41, p. 293.



4 Hook anchorages unnecessary in most applications

See reports on National Bureau of Standards research by C. C. Fishburn . . . ACI Proceedings, Vol. 44, p. 289; by F. E. Richart . . . ACI Proceedings, Vol. 45, pp. 97 and 237.

See new ACI Building Code

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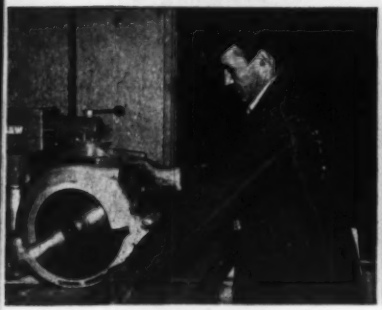
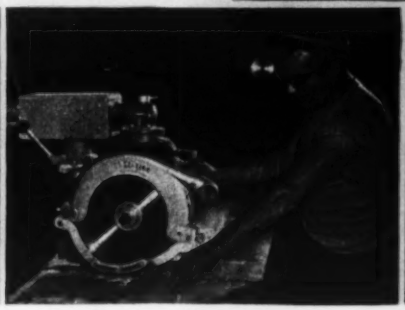


"Best Radial Saw I ever used," says Jacob Dech, using a SKIL Radial Saw to cut lumber for forms and supports for the St. Vincent Charity Hospital addition. "I've cut the lumber for a lot of jobs with this saw. It's fast and easy to adjust, it's accurate, and it doesn't foul up with sawdust."



"Most accurate Radial Saw I've ever used," says Tony Sottosanti, using a SKIL Radial Saw to pre-cut trim on the nearly completed 12 story, 93 apartment building, Shaker Towers. This saw has been at work cutting the lumber for the wall studding and all jobs demanding heavy duty cutting.

SKIL Portable Saws are on the job too— "A SKIL Saw is easy to handle and less tiring to use," says Jacob Dech, using SKIL Saw Model 825 to cut wedges.

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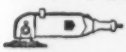
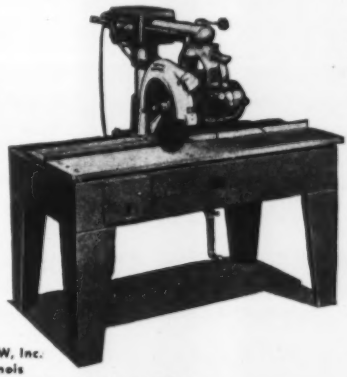
SKIL PORTABLE TOOLS

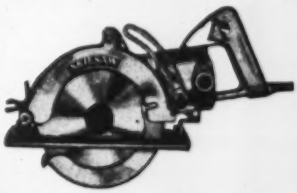


SKIL Disc Sander

SKIL Belt Sander

SKIL Driver





Model 825 is a powerful, heavy duty 8¼" saw. Full base adjustments: 0° to 2⅝" vertical depth of cut; 0° to 45° bevel adjustment; 2⅛" depth of cut at 45°. Free speed of blade: 3000 r.p.m. Overall length: 18". Weight: 17¼ lbs.

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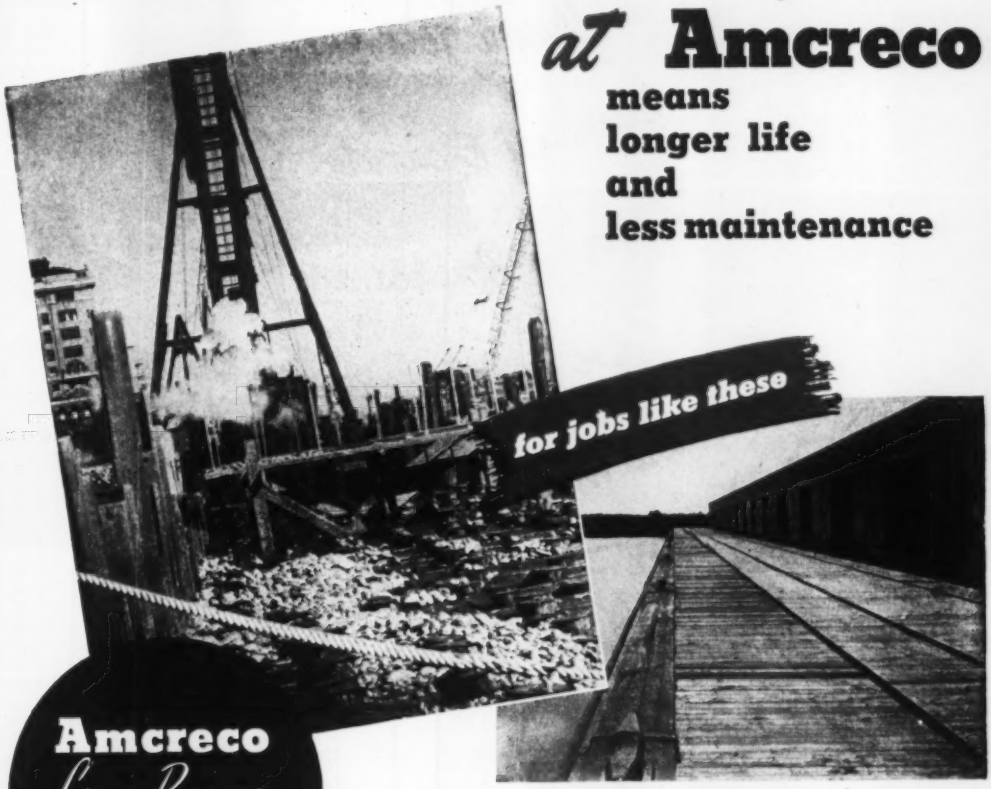

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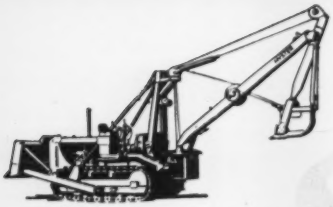

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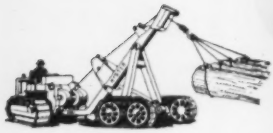

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FOR 22 YEARS Hyster has been manufacturing TOWING WINCHES and some 30 OTHER TRACTOR TOOLS for Caterpillar-built tractors.

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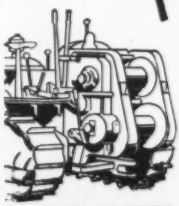
HYSTER



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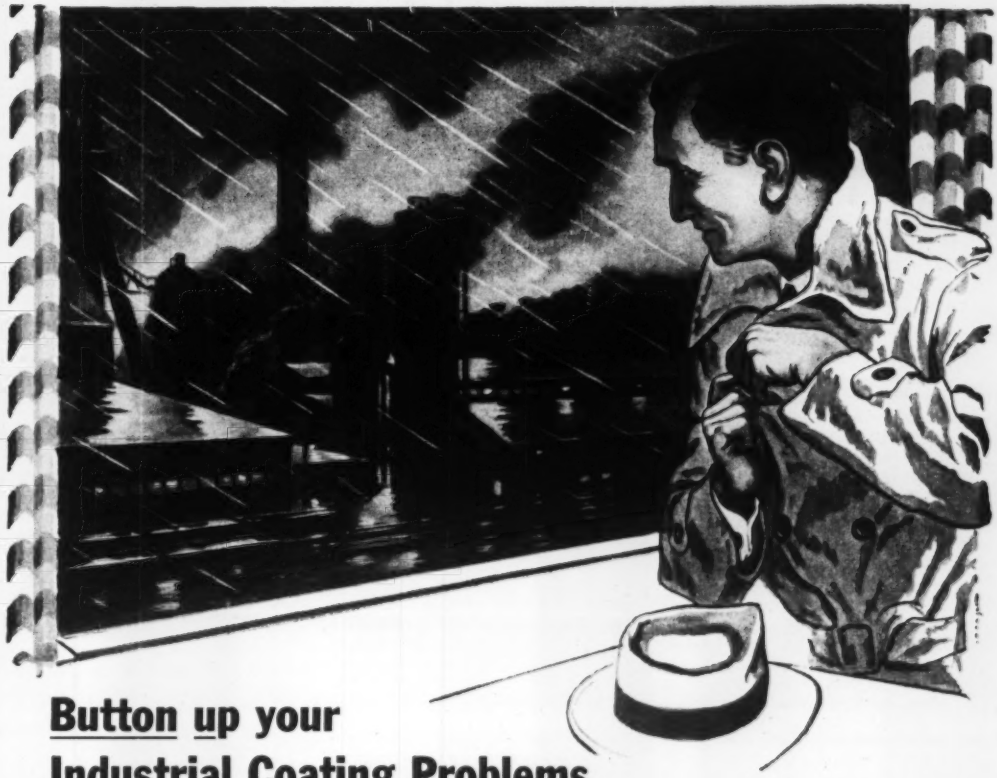

Button up your Industrial Coating Problems with Flintkote's HYDRALT*

Here are coatings especially formulated to solve many of your industrial protective coating problems . . . and do it economically . . .

Flintkote Hydralt Asphalt Emulsions.

These versatile coatings, applied by spray, brush and trowel, form efficient barriers against dampness, weather, acid fumes and smoke. Use them on steel, concrete and insulation materials.

Flintkote HYDRALT Protective Coatings, for example, are a unique mineral colloid type of asphalt emulsion which creates a film reinforced within itself. They are durable. So durable, in fact, that many installations remain just as effective after *20 years.*

You'll find *many* advantages in specifying HYDRALT Protective Coatings.

HYDRALT Emulsions require no heating.
. . . Won't crack or check from cold.
. . . Are completely fire-safe and non-toxic.
. . . Won't sag or flow under heat.
. . . Are supplied in various consistencies, for every condition and application method.

Be sure and ask about our Asphalt Emulsions for your own use . . . and button up your industrial protective coating problems *for good.*

* T. M. Reg. U. S. Pat. Off.

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FLINTKOTE
Products for Industry

SAVED UP TO 50% ON BATTERY COSTS

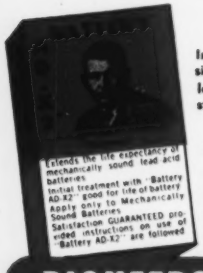
BATTERY AD-X2*

Frank I. Guilford, manager California Tractor & Equipment Corp., Oakland, Calif., writes:

"In 1947 we obtained some War Surplus Euclids. They had been stored in the Tropics and we found the batteries could not be normally charged even though they had never been used. We bought 108 packages of Battery AD-X2, treating the batteries as per directions, and charged them. These batteries came to full charge after treatment.

"After this experience we adopted your Battery AD-X2 Service System, treating all our mechanically sound batteries and sending our junks in for re-processing. Your method of handling our battery problems has saved up to 50% on our battery costs over the past 3½ years. It has also resulted in reducing downtime on our rented equipment. Your full money-back guarantee is appreciated by us after many years of controversy over battery adjustments on a standard warranty basis."

Start saving NOW with Battery AD-X2. Group 1 and 2 battery treatment, $3 . . . or use our Re-Processed Batteries. Money-back guarantee. Write or phone TODAY for prices, fleet discounts and address of nearest distributor.


Extends the life expectancy of mechanically sound lead acid batteries
Initial treatment with "Battery AD-X2" good for life of battery
Apply only to Mechanically Sound Batteries
Satisfaction GUARANTEED provided instructions on use of "Battery AD-X2" are followed

In use continuously since 1947, keeping lead acid batteries stronger longer.

* Trade-mark

None genuine without this picture and signature on package

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Still some territories, State and local, open to qualified operators. 10

NEWS BRIEFS

• **Construction records fall**—Construction records continue to topple as the 67-mile Western Extension of the Pennsylvania Turnpike System moves toward completion. Latest record is the 6,166 ft of concrete, 12 ft wide, laid by the L. G. Defelice and Son Co., of North Haven, Conn., in a single day. Two separate crews, laboring day and night, performed this feat on Aug. 1. The previous record of 5,302 ft was set by the Williams Paving Co., of Norfolk, Va., during construction of the 100-mile Philadelphia Extension of the turnpike in 1950.

• **Oklahoma Turnpike progress**—If present schedules continue to be maintained, Oklahoma's $31,000,000 Turner Turnpike linking Oklahoma City and Tulsa, will be completed by the first of December of next year. The turnpike engineers, DeLeuw, Cather and Co. of Chicago, have made this report to the turnpike authority. Prospective completion date is about two months later than the date originally set in the authority's bond issue prospectus issued Nov. 2, 1950.

• **Art is long and life is fleeting**—Famed Architect Frank Lloyd Wright's offer to design, free-of-charge an artistic bridge across the Wisconsin River has failed to stir up enthusiasm among business and civic leaders of the resort city of Wisconsin Dells, Wis. Wright's offer was originally made a couple of years ago and revived last month after the state highway department announced plans to erect a new bridge near the present combined highway and railway bridge at the west edge of the city. The new structure, as planned by the highway department, will cost an estimated $700,000.

• **What it takes to build a house**—It takes 1,420 man-hours to build the average one-family home, reports the National Association of Home Builders. Biggest manpower item is 548 hours by carpenters. Followed by 104 by bricklayers and masons, and 121 by painters. Of the total 1,089 hours are put in by skilled workers.

• **Storm damage**—Recent flash floods in northeastern Colorado caused much damage to the vital Horsetooth feeder supply canal in the Colorado-Big Thompson project and to roads in the area. The $7,000,000 canal, which carries Colorado River water about 12 miles from the Big Thompson siphon to the Horsetooth reservoir near Loveland, Colo., was broken in 21 places—some breaks being 75 ft wide. The Red Stone siphon—250 ft long and ten ft in diameter—was plugged with debris, mud and trees; and both the Estes and Mary's Lake power plants were shut down.

• **Safer highway work**—Facts submitted by F. E. Goodhart, safety engineer of the Pennsylvania highway department, show that the accident frequency rate stands at a new low of 06.5 as compared with 08.5 last fiscal year, and 2.65 during the 1948-49 fiscal period. This record was achieved during 33,199,467 man-hours of work.

• **Codes for reinforced concrete** — A new edition of the American Standard Building Code Requirements for Reinforced Concrete has just been approved by the American Standards Association, 70 East 45 Street, New York 17, N. Y. It will replace the 1948 standard. Changes have been made to allow for the improved properties of new-style deformed reinforcing bars complying with ASTM Specification A305. The changes decrease the allowable bond stress in plain bars (including the old types of deformed bars) and increase the allowable bond stresses for the new types of bars over those previously allowed for the old types. This standard was developed by a committee of the American Concrete Institute under the procedures of the American Standards Association. The Defense Production Authority has just announced that officials of 11 federal agencies have agreed to abide by the new provisions.

• **To train sanitarians**—Plans for training 400 public health engineers and sanitarians in New York State have been announced by Dr. Herman E. Hilleboe, state health commissioner. If appropriations are obtained, the plan will go into operation next year. The training is designed to supplement knowledge of basic sanitary engineering with formal education in biological, sanitary science and public health subjects.

• **Symbolism**—A bottle of Charles River water from Boston, Mass., was flown from that city to Chicago to be used in christening a new Chicago bridge to be known as the Paul Revere Bridge. Boston Mayor John B. Hynes said he had received the request for the water from Chicago's Mayor Martin Kennelly. Upon arriving in Chicago the airplane bearing the water

(*Continued on page 14*)

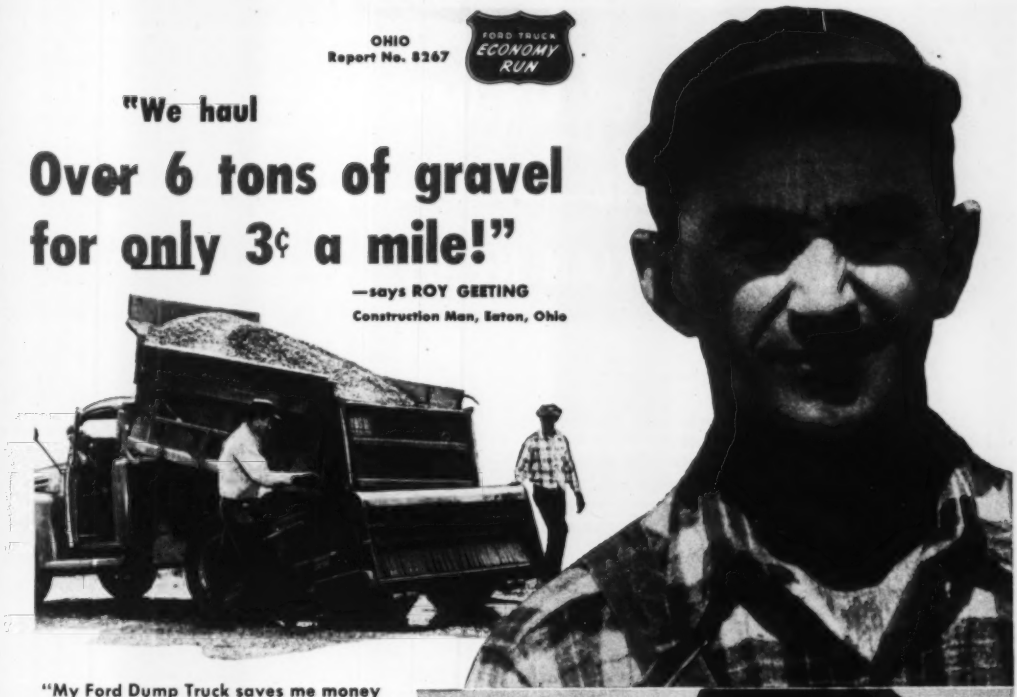
OHIO
Report No. 8267

FORD TRUCK ECONOMY RUN

"We haul

Over 6 tons of gravel for only 3¢ a mile!"

—says ROY GEETING
Construction Man, Eaton, Ohio

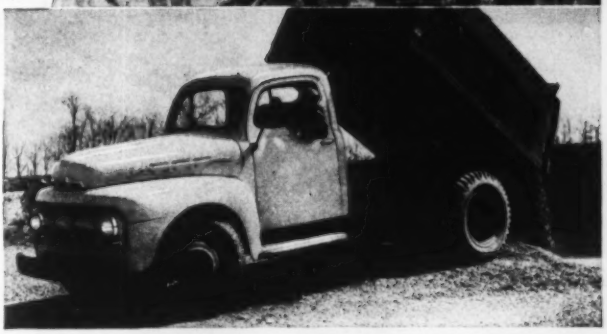


"My Ford Dump Truck saves me money every mile," says Mr. Geeting. "I save about a dollar a day or almost 300 dollars a year on gasoline alone!"

Contractor Geeting uses his 1950 Ford F-6 Dump for all kinds of roadwork (i.e., hauling sand and gravel, sanding hills, plowing snow). He says, "It's the ideal truck for cramped quarters because it steers and handles so easily."

He entered his truck in Ford's nation-wide Economy Run and says: "My Ford traveled 21,003 miles with loads of over 6 tons. Yet it cost only $637.83 for gas, oil, maintenance and repairs. That's a running cost of only 3.04 cents a mile!"

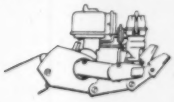
Like others who rely on Ford for low running costs, Roy Geeting is sold on the money-saving service he gets from his Ford Dealer. For more facts on the trucks that last longer *and* save you money every mile—mail coupon below.



This Ford F-6 Dump for '51, like Mr. Geeting's truck, is a favorite with construction haulers. Power choice of 3 great engines . . . 100-h.p. V-8, 110-h.p. Big Six and 95-h.p. Six. Available with the 5-STAR Cab, or, at added cost, the 5-STAR EXTRA Cab for more efficient driving, safety and convenience. Single speed rear axle standard, 2-speed axle also available (at extra cost) with wide range of ratios for operating flexibility.

Availability of equipment, accessories and trim as illustrated is dependent on material supply conditions.

POWER PILOT HELPS CONSTRUCTION MEN HOLD DOWN HAULING COSTS



The Ford Truck Power Pilot is a simpler, fully-proven way of getting the most power from the least gas. It is designed to synchronize firing *twice* as accurately.

You can use regular gas . . . you get no-knock performance. Only Ford in the low-price field gives Power Pilot Economy.

FORD TRUCKING COSTS LESS

because FORD TRUCKS LAST LONGER!

Using latest registration data on 7,318,000 trucks, life insurance experts prove Ford Trucks last longer!

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MAIL THIS COUPON TODAY!

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3255 Schaefer Rd., Dearborn, Mich.

Send me without charge or obligation, detail specifications on Ford Trucks for 1951.

Full Line ☐ Heavy Duty Models ☐
Light Models ☐ Extra Heavy Duty Models ☐

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DEFENSE and CIVILIAN NEEDS

And timber fabricators in all sections of the country are ready to serve you.

Our 20-page booklet "Timber for Military, Commercial and Industrial Buildings" illustrates the many types of jobs now being built with the Teco connector system, glued-laminated construction and Lamella construction.

Here in pictures you'll see stores, markets, factories, warehouses, garages, hangars of the type that are being built now.

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ENR

News briefs . . .

was met by a rider dressed in Colonial costume, who presented the container to Mayor Kennelly. The point is that Paul Revere crossed the Charles River on his famous ride in 1775.

• **Farm-to-market-roads**—The highway department of South Carolina has allocated $46,500,000 for farm-to-market road construction in the last six years, including the $7,000,000 earmarked for that purpose during the present fiscal year.

Cover picture

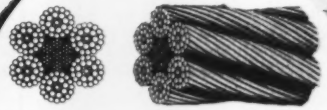
One of the rush jobs on the Western Extension of the Pennsylvania Turnpike (now planned to be opened late this fall after delays created by the defense program made the scheduled October opening impossible) is the bridge over the Allegheny River at Oakmont, near Pittsburgh. With its 61 x 2,179 ft steel grid deck in place, the next job is a concrete fill to complete the riding surface.

Booth & Flinn will apply it under a subcontract with the American Bridge Co., which fabricated and erected the bridge on foundations constructed by the Dravo Corp.

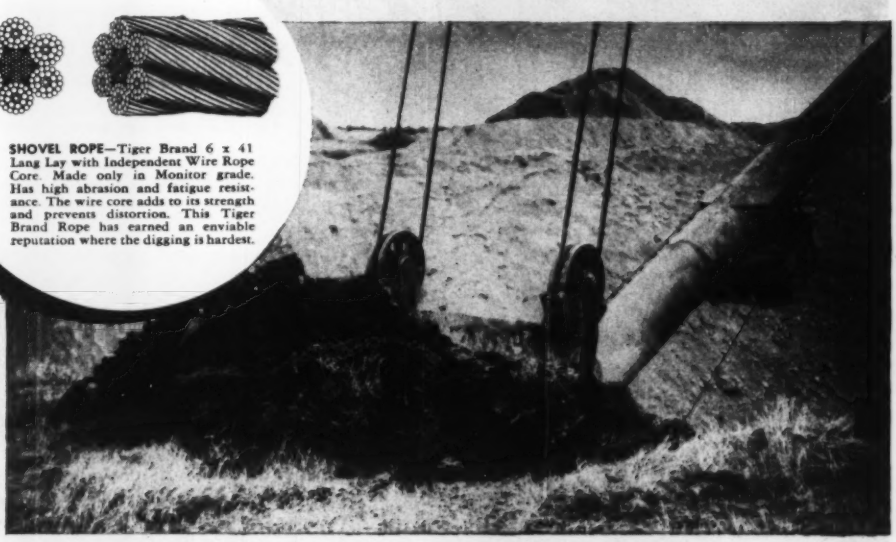
The bridge, designed by Modjeski & Masters, consulting engineers, Harrisburg, Pa., includes five truss spans, arranged in a continuous cantilever pattern and four girder spans in the north approach. The steel grid of the deck is 4½ in. deep with 3 x 4-in. openings. Concreted with a 3 in. overfill, it will provide a 5 in. thick roadway.

In addition to the Allegheny River crossing the Western Extension includes another major bridge (over Beaver Creek) and three viaducts. Totaling 67 miles in length the extension carries the Turnpike to the Ohio line and brings its total mileage across the state to 327. Next job—still in the talk stage—is to extend it from its eastern terminus to a new Delaware River bridge so as to provide a connection with the New Jersey Turnpike.

How to pick the "Winner" for tough wire rope jobs!



SHOVEL ROPE—Tiger Brand 6 x 41 Lang Lay with Independent Wire Rope Core. Made only in Monitor grade. Has high abrasion and fatigue resistance. The wire core adds to its strength and prevents distortion. This Tiger Brand Rope has earned an enviable reputation where the digging is hardest.



• You can make money or lose it by the way you select wire rope. It's good to pick a rope like American Tiger Brand—that has proved its merits over a period of years—but that's only part of the story.

Some types of ropes are good in mud and sand—others are not. Some can stand bending fatigue caused by small sheaves, others break up under this abuse. The point is—can *you* tell by looking at a rope whether or not it will be a "winner" on your job?

Take a tip from the Tiger Brand Specialist

Here's a man who knows his ropes. He can tell you the construction that should be best for your particular needs. Don't hesitate to call him in. He has the experience to help you pick a winner . . . and the right rope for your job can cut your wire rope costs in half. Write for our handbook, "American Tiger Brand Wire Rope" which shows all the different constructions. Address American Steel & Wire Company, 842 Rockefeller Bldg., Cleveland 13, Ohio.

AMERICAN STEEL & WIRE COMPANY, GENERAL OFFICES: CLEVELAND, OHIO
COLUMBIA STEEL COMPANY, SAN FRANCISCO
TENNESSEE COAL, IRON & RAILROAD COMPANY, BIRMINGHAM, SOUTHERN DISTRIBUTORS
UNITED STATES STEEL EXPORT COMPANY, NEW YORK

USS

AMERICAN TIGER BRAND WIRE ROPE

Excellay Preformed

UNITED STATES STEEL

Available Now—

RYEX EXPANDED METAL

Here's one steel product that's in good supply. And one with very little restriction on its use. Ryex expanded metal is on hand at your nearby Ryerson plant in two types—standard and flattened—and in a wide range of sizes and gauges. It may be used in any authorized construction and its application in the building and industrial fields are endless.

Use Ryex to reinforce small concrete slabs, for repair of walls, dams and paving and for all types of Gothic and stucco work. Use it to make tool and stock room enclosures, guards and screens, shelves, gates and walkways.

You'll find this versatile steel mesh has high bonding strength in concrete and effectively distributes concentrated loads over a wide area. You'll also like Ryex for enclosures and similar applications because it is more rigid than an equal weight of solid flat-rolled steel, yet affords good ventilation and high visibility through its open diamond pattern. Both standard and flattened Ryex are safe to handle since all sharp edges have been removed.

Of course most construction steels are in short supply due to defense demands. We can only promise to do our best to supply most requirements. But you can count on quick shipment of Ryex from Ryerson. Just call our nearest plant.

RYERSON STEEL

JOSEPH T. RYERSON & SON, INC. STEEL SERVICE PLANTS AT: NEW YORK • BOSTON
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CHICAGO • MILWAUKEE • ST. LOUIS • LOS ANGELES • SAN FRANCISCO

WIRE ROPE

Almost every type of wire rope except galvanized can be shipped on short notice, and Ryerson carries only highest quality rope from leading producers.

Both light and heavy weight lally columns can be supplied quickly to specification. Steel caps, bases and brackets fabricated to meet all structural requirements. Sizes from 3" to 12¾" in diameter.

LALLY COLUMNS

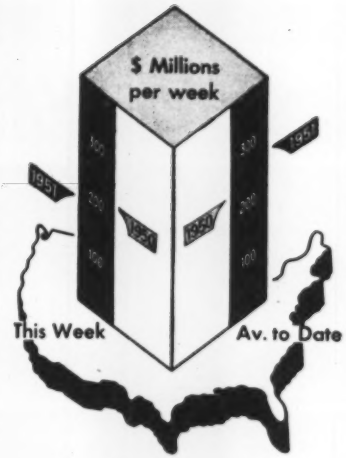
MACHINERY & TOOLS FOR PROMPT SHIPMENT

Have you thought of Ryerson as a source for contractor's machinery and tools? We can deliver the following promptly: portable electric tools, hand operated bar shears and benders, chain and electric hoists, many others.

HI-BOND RE-BARS

First of the new high-strength bars, the Hi-Bond reinforcing bar gives stronger construction and increased resistance to the formation of tensile cracks. Hi-Bond's greater bonding grip is test-proven. Every bar meets or exceeds ASTM spec. A 305. They are hard to get today, but Hi-Bond re-bars are worth getting tomorrow.

THE CONSTRUCTION WEEK



Contracts by type of work

	This Week	Cumulative 37 wks 1951	1950	% chge
Waterworks	$3.5	$157.3	$167.7	−6
Sewerage	6.3	227.0	194.6	+17
Bridges	5.7	235.1	262.8	−11
Highways	21.6	863.9	923.0	−6
Earthwork, Waterways	6.4	378.4	316.7	+19
Buildings:				
Public	33.8	1,627.8	1,181.0	+38
Housg., pub.	...	551.6	206.4	+167
Housg., priv.	48.0	1,398.7	2,557.4	−45
Commercial	11.2	484.3	693.2	−30
Industrial	38.4	2,949.1	1,015.7	+190
Unclassified	14.3	1,283.8	962.2	+33
Total	**$189.2**	**$10,157.0**	**$8,480.7**	**+20**

NOTE: Minimum size projects included are: Waterworks and waterway projects, $34,000; other public works, $60,000; industrial buildings, $82,000; other buildings, $300,000.

ENR COST INDEX

Index Base = 100		1913	1926	1949
Constr. Cost.	Sept.'51	543.21	261.12	113.87
Bldg. Cost	Sept.'51	400.50	216.50	113.85
Volume	Aug.'51	452	184	131

(Other Business News on p. 101)

CLOUDS OVER ROANOKE RAPIDS—Department of Interior attorneys ran into an unexpected storm in their appeal of an FPC decision awarding Virginia Electric and Power Co. a permit to build at Roanoke Rapids, N. C. (ENR Nov. 30, 1950, p. 26). The storm came from the three-man bench of the Fourth U. S. Circuit Court of Appeals, which wanted to know what right the Secretary of Interior has to challenge an FPC decision. Acrimonious debate left no doubt that whatever the circuit bench may decide, the issue would go to the Supreme Court. Fight dates back to VEPCO's October, 1948, application to build a $27 million plant at the rapids. Interior and the Virginia REA objected, on a claim of prior intent to build at the site.

HOUSING SIDELIGHT—Amid the excitement of a cut in restrictions on housing (ENR Sept. 6, p. 24), a sidelight cropped up, quietly, in Chicago. Members of the Trailer Coach Manufacturers Association heard their officers say that sales were up a booming $9 million over last year (to $117 million), predict that 1,700,000 persons would be living in mobile homes by 1952. Biggest buyers are military personnel and workers in new boom areas around new plants.

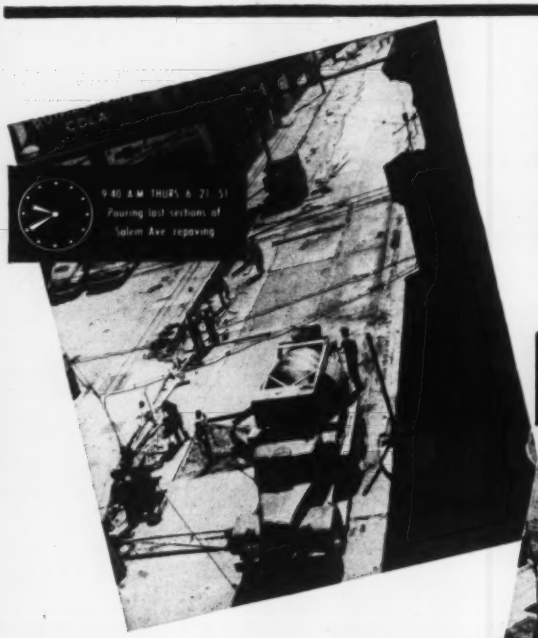
SURPRISE AT FOLSOM—That $29,440,000 low bid by Savin Construction Co. and Merritt, Chapman and Scott for Folsom Dam was a big surprise to western contractors. The surprise was not only that the figure was low—almost $2 million below the Corps of Engineers estimate figured without profit—but that there were so many eastern firms among the low bidders.

COULD HAVE BEEN LOWER—Speaking of Folsom Dam, there are some who say the bid could have been lower if the stilling basin below the spillway had been omitted. The Corps of Engineers have been using flipbucket spillways, or some other form of energy diffusing device, instead. And even though Folsom is a corps flood control project, the Bureau of Reclamation has a say in the development since it will develop power and irrigation benefits. The bureau's insistence on an expensive stilling basin may have added as much as $2 million to the project cost.

CHICAGO WRESTLES WITH PARKING—Like every other major city in the U. S., Chicago is confronted with the steadily mounting problem of too many cars for the space provided to park them. To help get more space, Mayor Martin Kennelly has announced he will introduce an ordinance for an $11 million underground project in the central business district. Five sites have been approved. They will hold an estimated 3,104 cars. Engineers for the Chicago Park District are planning two more underground garages near the loop to hold 2,130 cars. Illinois recently has enabled Chicago to float bond issues without referendum to build parking facilities.

HOMES FOR FLOOD STRICKEN KANSAS—Homeless flood victims welcomed the announcement last week of special federal assistance for financing an initial 2,400 low-cost and moderate-cost permanent homes in Kansas. Raymond M. Foley, Administrator of the Housing and Home Finance Agency and Federal Emergency Flood Relief Coordinator, said the assistance will be available through a system of specific authorizations for programmed housing.

THE PUBLIC BE PLEASED!



Roanoke, Like Many Other Well-run Cities, Repaves with 'Incor' — Saving Motorists' Time and Tempers

● Closing a busy street like Salem Avenue in Roanoke, Virginia, for repaving can be a prolonged headache for motorists, a serious trade loss for merchants. But not if the city follows a policy of the public be PLEASED:

Like John L. Wentworth, Roanoke's Director of Public Works, who used 'Incor' 24-Hour Cement for repaving busy Salem Avenue from Jefferson Street, W., to Second Street, S. W.

Placed one day, 'Incor' concrete carried heavy mixer trucks the next. Result, Mr. Wentworth estimates a saving of 45 days' traffic tie-up.

Salem Avenue is typical of many a busy main stem the country over. With 'Incor,' motorists praise the foresight of progressive city fathers . . . merchants save sales that would otherwise be lost.

Good news for taxpayers, too . . . because dependable 'Incor'* high EARLY strength saves at the go in . . . dependable high ULTIMATE strength saves tax outgo, through extra years of maintenance-free service.

Serving public convenience today and the public pocketbook tomorrow . . . backed by nearly 25 years' dependable performance . . . deservedly, America's FIRST high early strength Portland cement.

*Reg. U.S. Pat. Off.

ROANOKE, VIRGINIA, SALEM AVENUE REPAVING
Engineers: **CITY OF ROANOKE ENGINEERING DEPARTMENT**
JOHN L. WENTWORTH, Director of Public Works
H. C. BROYLES, City Engineer
Contractor: **PIONEER CONSTRUCTION CO., INC.**, Roanoke
Ready-Mix 'Incor' Concrete: **CONCRETE READY MIXED CORPORATION**, Roanoke

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LONE STAR CEMENT, WITH ITS SUBSIDIARIES, IS ONE OF THE WORLD'S LARGEST CEMENT PRODUCERS: 17 MODERN MILLS, 125,000,000 SACKS ANNUAL CAPACITY

HOW POPULATION GROWTH HELPS CONSTRUCTION

Rapid growth of the U. S. population is a boost for construction—not just this year, but for many years to come.

The population has been growing fast for about ten years. The war, plus postwar prosperity, caused a "baby boom" that raised the population about 14.5% between April 1, 1940, and April 1, 1950—to a total of over 151.1 million—and it has gone up another 3.6–3.7 million since then.

This population growth means more construction business in the future. In the short run, it means greater needs for schools, houses and other buildings. In the long run, it should mean more demand for almost every type of construction.

• **Effects Already Felt**—Housing has already been hit by the huge growth in population. Pressure from wartime and postwar marriages and the increased number of children born since the war helped build the postwar housing boom and keep it going.

The postwar housing boom may have worn itself out by now. Many experts think the U. S. is returning to a more normal (but still high) level of home-building. But the pressures on housing from the big increase in population still have not been fully felt. For one thing, the rate of population growth still hasn't slowed down. For another—most of the housing units built since the war are three- to five-room affairs. As the postwar babies grow older and want rooms of their own, there may be another boom in demand for larger homes.

Population growth is just beginning to hit the schools. True, they have been getting steadily more crowded for years. But the first large group of postwar babies reached school age last year—and they caused enrollment in public schools to jump by 900,000. After 1952, annual increases in enrollment will run well over a million a year for several years. Enrollment in grades one through eight won't reach a maximum until the middle or late fifties, if then.

These terrific increases in enrollment have to lead to more school building. Present facilities are inadequate to serve even the present school population, let alone the hosts of young children now reaching school age.

• **Long-Range Possibilities**—Increased population has already helped raise the volume of these types of construction. It has probably helped, directly or indirectly, to increase the amount of work done on other types of construction like hospitals and commercial buildings. But the effects of recent population growth on construction may be felt even more in the long run, when today's children are grown up and having their own children.

When the postwar children grow up, they should boost the need for all kinds of construction. There should be a marked increase in demand for housing. Needs for community facilities like sewers and roads should be on the rise. A larger population should bring a larger volume of business in general—which would mean more stores, warehouses and industrial buildings.

• **The Outlook**—None of these long-range possibilities are sure things—they depend on too many assumptions. For instance, it's possible that people might have fewer children in the future. In that case, there would not be such a big need for new houses and other community facilities.

But—barring some such major shift in American social or economic habits—the increase in population of the past ten years should help hold up construction volume all along the line over the next twenty or more years. And, as long as the present rate of population growth keeps pushing the population higher, the likelihood that these possibilities will be realized becomes greater and greater.

To every Contractor
who wants to Save Money with

HOMELITE

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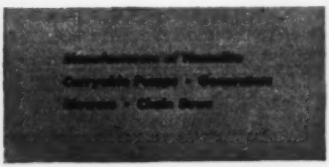

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Fall full of trouble

THE NEWS LAST WEEK portended some new troubles and accented some old ones for construction.

Overshadowing other developments of the moment is the imposition (next month) of price regulation for the entire industry. What is to be gained by attempting to put ceiling prices on construction jobs is difficult to imagine. Bidding imposes its own regulation far more effectively. On negotiated contracts renegotiation is always available to protect the taxpayer. Determining prices for future jobs solely from past job prices (without regard to possible differences in the jobs or the well-known vagaries of the weather) has been the road to ruin for contractors before. Now such a pig-in-poke procedure is required by law. It spells trouble.

Last week, too, the fourth quarter steel allocations highlighted the materials shortage as never before. Only the AEC and the Department of Defense will get all the structural steel needed. Commercial construction gets 11%, industrial 26% and even the steel expansion projects are cut to 51% of requirements. The squeeze is on, with trouble ahead.

And then to spread the troubles to the house building field, the new defense housing law liberalizes credit for low-cost dwellings. More housing means increased demand for aluminum and copper. There isn't any excess available, says DPA, heralding a collision between two federal defense agencies, accompanied by some classic confusion.

It was a record week for trouble-brewing. The construction industry is sure to remember it during the Fall months just ahead.

Engineering manpower

THE GREAT LACK OF ENGINEERS for many types of work essential to the nation's defense program continues to be a source of concern. Because no relief is in sight, the Engineering Manpower Commission of Engineers Joint Council has called a convocation, September 28 in Pittsburgh, to consider the future of engineering and what can be done to improve it.

No bright picture can be painted. Between the decline in new students and the effect of the draft, there is little prospect for increasing the supply of engineers until late in the Fifties. In the meantime, relief can only come through better use of the available supply. But this, too, has its discouraging aspect in the well-supported conclusion that the military departments are not making good use of the engineers who are in uniform.

Here is a sore spot to which the convocation might well direct some of its attention. One way to improve it would be to get Congress to call for reactivation of the Roster of Scientific and Engineering Personnel, which was dropped after World War II. Were that listing then to be extended to include all engineers in the military service—with a requirement that each man state confidentially whether he is in engineering work that appears essential—the amount of wasted talent soon would be evident. Doubtless the new roster would also reveal many engineers in civilian occupation who could be used elsewhere to better advantage.

Higher gas taxes, better roads

AN INFORMATIVE STUDY of gasoline taxes was published in the June issue of PUBLIC ROADS, official publication of the U. S. Bureau of Public Roads. Briefly, it shows that gas taxes have only increased about 13% in the past ten years, whereas highway construction and maintenance costs have almost doubled, and the basic cost of living has gone up 77%. In the same ten years the price of gasoline increased 66%.

This situation suggests an increase in gasoline taxes as a logical way to raise much needed money for highway construction and maintenance, particularly since the effect of such an increase on each individual's pocketbook would be small.

For example, gasoline taxes account for only 6½% of the cost of owning and operating an automobile, which actually is lower in proportion to average incomes of automobile owners than was the 1940 tax. A one-cent increase would cost the average motorist only 0.07 of a cent a mile, or about 13 cents a week. Such an increase in the 19 states in which the present tax is less than 5 cents a gallon would increase the state funds available for highway construction by more than 50 percent.

An active campaign for a gas-tax increase that would bring these facts home to the public might succeed in states where the deficiencies of the road system are all too obvious. But to insure that the money went into roads, there would need to be a parallel campaign to get the state legislature to assign the increase definitely to highway work. Both campaigns would be difficult. The public is against tax increases of any kind, and legislators don't like to pin any income down to a particular purpose.

The curious thing about this is that the same public that opposes a tax increase of 0.07 of a cent a mile will gladly pay fifteen times as much to ride on a toll highway, and will do it gladly for the added time and comfort that use of the road provides.

Increases in gasoline taxes are not easy to put across, yet the possibilities for better free roads that are inherent in minor tax increases are so large as to justify a lot of hard work in selling this idea to the public.

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ENGINEERING NEWS-RECORD

SEPTEMBER 13, 1951 VOL. 147 NO. 11

NPA denies over-allotments; calls for 1952 applications

Difficulties to be less as authorized 4th-quarter orders approach balance with available supply; duplication blamed for apparent over-allotment

The National Production Authority says it hopes to have all allotments for fourth-quarter steel issued by the end of this week. It claims that when the excess tonnage orders over the amount allotted are canceled, there will be plenty for all authorized controlled materials orders.

As assurance for applicants who have been refused allocation, the NPA says they should not feel that consideration of their projects has been dropped entirely. It invites them to re-apply.

It has notified them, along with all applicants for advance allotments for construction scheduled in the first quarter of 1952 and succeeding quarters, to file their applications by Sept. 20.

• **Complaints voiced**—Contractors and engineers on going projects have joined in protest: Steel mills are returning our CMP authorized allotment orders for fourth-quarter deliveries.

The steel producers have a legitimate reason, as they explain: our fourth-quarter capacity is already completely sold out to previous authorized CMP orders.

Until the facts are known, it looks as if the CMP boys in Washington had allotted more fourth-quarter steel than the mills can ship. Actually, that is not the case. There are two main reasons for the temporary, apparent imbalance between authorized fourth-quarter orders and available steel supply for the period.

• **Reasons cited**—Both of these reasons tie back to the authorized buyers themselves—not to all of them, but to a good many.

The two monkey wrenches in the CMP steel-purchasing machinery are these: (1) failure of buyers to reduce previous orders in line with reduced CMP fourth-quarter allotments, and (2) duplication of orders by many purchasers—large numbers of them have served authorized CMP orders for their full requirements on four different suppliers. That duplication is contrary to directives—and therefore to the law—but many a doubting Thomas is using it to protect his fourth-quarter production.

• **Example given**—In structural steel, a good part of the temporary mix-up stems from manufacturers of "B" products. One of the nation's biggest steel companies for example, ordinarily sells 40% of its structural shapes to B-product manufacturers. All of these manufacturers have had their fourth-quarter allotments reduced below normal requirements. But up until two weeks ago few of the steel company's manufacturer customers had cut their full-requirements order for structural shapes—previously validated by a CMP allotment number.

The explanation is simple, as the manufacturers readily admit. Sure, their allotments have been cut by NPA. But they all hope to get the cut back by submitting a supplemental application, and most of them have sent in those applications.

NPA has been denying the supplemental requests as fast as it can. Once the manufacturers get their rejections from NPA, they ordinarily trim their orders on the steel companies. That action releases some fourth-quarter steel which was not previously discernible.

• **Duplication on purpose**—Manufacturers are equally frank about duplication of orders. Many of them freely declare that they have placed orders for controlled materials on four different mills.

Most of them say they will cancel three of the outstanding orders as soon as they get acceptance and confirmation of one. But at least one manufacturer has bluntly declared that he won't cancel a single order until he

(Continued on page 25)

Costs up 12% from price control base

Until the details of the OPS price regulations to be imposed on construction Oct. 1 are announced, the paper work required cannot be estimated. The one thing that is certain is the base to be used—July 1, 1949 to June 24, 1950 and the consequent importance of costs during that period (ENR Sept. 6, p. 23).

The levels of the ENR indexes of construction and building costs during the base period and now, are in the table below. A rise of about 12% in each index is to be noted.

Present and Base Period Costs Compared

	Base Period (July 1, '49–June 24, '50)		Sept. '51	% Rise Base Period High to Present	% Rise Base Period Av. to Present
	High**	Average			
ENR Const. Cost Index*...	506.9	485.8	543.2	7.2%	11.9%
ENR Bldg. Cost Index*....	373.4	357.1	400.5	7.3%	12.2
Materials Component.....	201.3	188.6	215.8	7.2	14.5
Structural Steel(cwt)....	$3.40	$3.33	$3.65	7.4	9.8
Cement (bbl).....	2.97	2.96	3.16	6.4	6.9
Lumber (mftbm)..... av. fir, pine	90.50	80.60	97.06	7.2	20.4
Labor per hr.					
Skilled.....	$2.52	$2.46	$2.70	7.3	9.6
Common.....	1.53	1.49	1.64	7.1	10.2

* 1913 = 100 for both indexes. The ENR Construction Cost Index consists of the Materials Component plus Common Labor Component; ENR Building Cost Index consists of the Materials Component plus Skilled Labor Component.

** In every case the highest level for the base period was in June, 1950.

Contractors' plight aired at hearings on shortage of steel for road building

Viewpoints presented reflect problems confronting entire construction industry under Controlled Materials Plan

The plight of contractors and engineers on civil works and private construction alike was mirrored last week in hearings before a Senate subcommittee on public roads of the Public Works Committee.

Basically, the hearings concerned the shortage of steel for construction. Specifically, they concerned the shortage of steel as it effects road building.

It was their purpose to impress upon Manly Fleischmann, NPA-DPA administrator, the importance of adequate highways to national defense. The NPA's attitude toward road building got a going over from the Bureau of Public Roads, National Roadbuilders Assn. and the American Association of State Highway Officials.

• **Halt looms**—General Eugene Reybold, executive vice president of the American Roadbuilders Assn. and Thomas H. MacDonald, commissioner of the Bureau of Public Roads testified that highway construction is rapidly grinding to a halt. Reason is that contractors can't get steel from the mills even if they have CMP tickets.

MacDonald said that there are currently 576 highway projects delayed or stopped due to the lack of steel. Total value of the projects delayed nears $300 million. Right now the gross amount of steel lacking is about 111,000 tons—a great part of which is structural sizes and shapes.

• **Too many allocations**—DPA Administrator Fleischmann acknowledged this condition. And he added that DPA knew it was passing out allocations for more steel than was available under the total production during the third quarter.

Fleischmann said that this was unavoidable during the transitional period where we were shifting from an uncontrolled economy to a controlled one.

• **Doesn't help**—This hasn't helped highway construction, however. Steel allocations for highway purposes, including primary, secondary, and access roads for the fourth quarter of 1951 took a further cut to 250,000 tons, even though the bureau asked for 482,000 tons. But the cut was even deeper than shown by the tonnage figures.

Biggest bottleneck in road construction has been structural sizes and shapes for bridges. During the third quarter, reinforcing steels didn't come under allocations.

Supposedly, the steel would have come from a considerable quantity of "free steel" than available. But, fourth-quarter allocations restrict structural steel to not more than 100,000 tons and the balance is controlled steel for reinforcing purposes.

• **Gives answer**—Fleischmann got his chance to answer inferences that DPA wasn't too impressed with the need for new highways.

He told the committee that when DPA got the screened "rock bottom" requirements from all claimant agencies for structural steel for all purposes—supported by statements that any cuts whatsoever would cause an immediate breakdown in the war effort—the gross total required was 223% of the known supply of structural steel.

Fleischmann also said that requests for steel from the Bureau of Public Roads for the year 1952 totaled 1,907,000 tons. According to Fleischmann, this was the highest in history of U. S. roadbuilding.

• **Action may result**—Actually, the hearings on structural steel shortages for highways cannot legally change the allocation of steel.

But what will happen is that a resolution will be introduced in Congress that will suggest NPA review its attitude toward highway maintenance and construction.

LEVEE REPAIRS RUSHED—Men and machines rushed reconstruction work on a 600-ft section of the Kaw River levee between Armourdale and Argentine districts of Kansas City last week as the Kaw River threatened to flood again. This section was washed out in July when the raging Kaw left its banks to do millions of dollars of damage in the area. In the background is the Old Southern Bridge. (AP Wirephoto)

Defense construction bill advances in Congress

The record-breaking $5.8-billion military construction bill last week passed the Senate with $118 million more than voted by the House.

The measure now is back for House consideration of the Senate increases and other projects.

Actual funds for the projects it authorizes are being provided separately—$4.6 billion of it included in the total $61-billion defense money bill which has passed both House and Senate.

AGC: Use subcontractors

Viewing with concern the many knotty problems that NPA regulations have dumped in their laps, the governing officials of the Associated General Contractors, meeting in Chicago last week, heard a useful and usable suggestion: Employ subcontractors as much as possible to help stabilize the construction industry.

Subs can have a difficult time under the Controlled Materials Plan. More than ever they are dependent on the big general contractors, if they are to stay in business. Even with the best of efforts, some specialized subs will have to seek other fields than construction—which is all the more reason to keep as many of the others as possible occupied.

The AGC sees utilization of subs as long-range planning. In the same vein, it urged governmental bodies to keep planning going for projects that can go ahead when the defense program cools down.

CMP allotments...

(*Continued from page 23*)

receives fourth-quarter shipment from one of the four suppliers on whom he has served authorized CMP tickets for steel.

• **Assure correction**—As over-ordering and duplication are corrected, more fourth-quarter steel will open up for construction projects.

Fleischmann and his CMP chief, Walter C. Skuce, know there will be enough steel to cover all allotments.

They assure all questioners that authorized CMP orders will be honored and that deliveries will be made—a trifle late, possibly, because of the mix-up attending CMP's birth, but not late enough to throw authorized projects off schedule for completion.

• **Adjusted allotments** – Late adjustments of structural steel requirements and allotments, up-to-the-minute figures released last week by DPA Administrator Manly Fleischmann, are given in accompanying table:

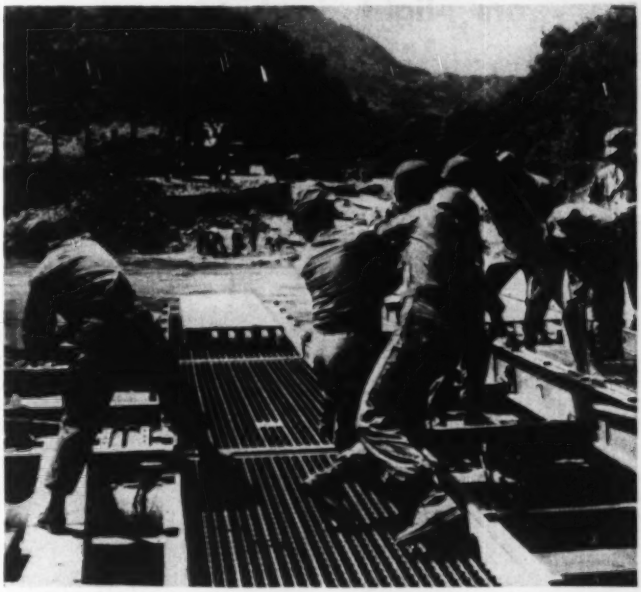
DPA FOURTH QUARTER 1951 ALLOTMENTS OF STRUCTURAL STEEL
(in Tons)

Program	Delegate Stated requirements	Agencies Allotment	Percentage
Atomic Energy Commission	35,000	35,000	100
Defense Electric Power Adm	161,944	120,000	75
Office of Intl. Trade	100,633	25,000	25
Federal Security Ag nc (schools and hospitals)	139,531	68,000	49
Maritime Administration	19,776	15,000	76
Dept. of Defense	207,845	194,757	94
Petroleum Admin. for Defense	102,123	60,000	59
Bureau of Public Roads	232,793	100,000	43
Defense Minerals Admin	12,670	7,000	55
Defense Transport Admin	104,553	30,000	29
Housing and Home Finance Agy	34,034	17,000	50
Secretary of the Army (Domestic Construction)	15,202	14,000	90
NPA (Canadian Division)	64,281	50,000	77
OTHER			
Military	42,602	42,602	100
Industrial Construction	343,723	163,105	48
Other Construction, Including Commercial and Religious	106,574	12,055	11

ALCAN speeds construction of $500-million project

Aluminum Company of Canada will proceed with its main dam on the Nechako River in Tweedsmuir Park area of B. C. at once, thus allowing immediate completion of the full $500-million hydroelectric and aluminum project if required. Originally construction was planned in several stages.

The Nechako dam, subject to government approval of plans and specifications, will be more than 300 ft high and 1,500 ft long, and will contain more than 3,350,000 cu yd of gravel. Morrison-Knudsen of Canada is the contractor.



COMBAT ENGINEERS—GI's of the 58th Combat Engineers show the strain of heaving heavy timbers into place as they rebuild a bridge across the Hantan river on Korea's central front last week. The bridge was washed out by high waters. Pace of rebuilding was stepped up as the tempo of fighting increased. (AP Wirephoto)

New construction off from last year

Expenditures for new construction in August totaled $2.8 billion, about the same as in July, according to preliminary estimates made jointly last week by the U. S. Labor Department's Bureau of Labor Statistics and the Building Materials Division, U. S. Department of Commerce.

The dollar volume for new construction this August was slightly under the August 1950 total, but, when adjusted for the increase in construction costs, it represents a significantly smaller physical volume of work put in place.

A contraseasonal decline (2%) in private residential building and an 11% drop in commercial building reflect the continued effects in August of building restrictions. Compared with August a year ago, private homebuilding was down by a third and commercial building by 6%. Private industrial building increased by 4% over July and was double the August 1950 dollar volume.

• **Public works up**—Expenditures for total new private construction declined fractionally from July to $1,865 million, but the decrease was more than offset by a 4% rise to $937 million for public construction. Most of the rise in public expenditures was in atomic energy and military projects and highway construction.

Construction of military facilities, industrial plants, electric power projects, and other defense-supporting facilities continued to rise in August as rapidly as available supplies of structural steel, copper, and other scarce material would permit.

• **Military boom**—Expenditures for military construction amounted to 6½ times the level of a year earlier, while industrial plant (private and public) building had more than doubled.

For the first 8 months of 1951 expenditures for new construction totaled $19.5 billion, almost 12% over the comparable period in 1950. Private new construction, at $13.7 billion, was up 5% over last year and new public construction totaling $5.8 billion was up by 31%.

Building plans halted

Plans for immediate construction of a $23 million electric generating plant at Wilmington, N. C. have been temporarily suspended by the Tide Water Power Co. Construction material shortages and previous power commitments were given as reasons for the postponement.

TWO MILLIONTH—Placement of the two millionth cubic yard of concrete in Hungry Horse Dam in northwestern Montana has been announced by the Bureau of Reclamation. Nearly two-thirds of the project's ultimate 3.1 million cu yd of concrete are in place. Now 379 ft above bedrock, Hungry Horse Dam will be 564 ft high when completed—the world's third highest concrete dam. (ENR Jan. 11, 1951, p. 25.)

Army Engineers may negotiate at Scott

Col. J. P. Campbell, Chicago District Engineer, Army Corps of Engineers, is studying proposals submitted Sept. 7 on the Scott Air Force Base construction near Belleville, Illinois.

These are not sealed contract bids based on readvertising the work. They are merely proposals submitted by contractors organizations which will be used as a basis of negotiating a contract for the work.

This is not a new procedure. It has been followed in the past when necessary to get emergency work underway.

• **Interest high**—Interest in the bidding is heightened by continuing reports of bad labor conditions in the St. Louis area. Contractors have maintained that feather-bedding, slowdowns and jurisdictional disputes have made labor costs "fantastic".

Contractors reportedly have been pegging their bids high on work in the St. Louis area to protect themselves from the unusually high labor costs. This has been reflected in the delays already experienced to trying to get work underway on the Air Force base.

Excessive bids submitted at prior lettings on the $24-million construction program at Scott Air Force Base have delayed that work for many months. Apparently, the Army engineers will negotiate a contract now to avoid further delays.

U.S. assails freight charges for cement

The government has filed a complaint with the Interstate Commerce Commission against four railroads alleging that they have been charging too much for hauling cement to Hungry Horse Dam, Mont.

It is seeking lower rates in the future, and asking payment for the overcharges claimed. Between $567,000 and $756,000 in freight charges are involved.

The complaint was filed by Attorney General J. Howard McGrath against the Great Northern Railway Co., Northern Pacific Railway Co., Chicago, Milwaukee, St. Paul and Pacific Railroad Co., and Spokane International Railroad Co.

• **Complaints outlined**—Specifically the complaint says: the United States had been, and is being, subjected by the defendant railroads to excessive charges on shipments of cement from Irving and Metaline Falls, Wash. to Coram, Mont. for use in construction of Hungry Horse Dam.

The complaint requests that the ICC set reasonable rates for cement shipments to the dam and award reparations on past shipments.

A companion complaint on freight rates for cement shipments from Trident, Mont. to Coram is being filed with the Board of Railroad Commissioners of the State of Montana.

• **Bags vs. bulk**—The dam, now nearly two-thirds completed, and power plant will begin serving farms, homes and industries in the Pacific Northwest some time late in 1952, it is estimated. It is a Bureau of Reclamation defense project of highest priority.

Basis for the complaint:

"The present rates on cement were established at a time when most cement was sacked and shipped in box cars. Now, cement is shipped also in bulk and in covered hopper cars. When these matters are considered, it is apparent that lower rates on these cement movements are justified."

The Bureau of Reclamation has asked the railroad to adjust their rates and the railroads have refused.

• **Costs cited**—Now the government is seeking legal adjustments which will affect costs at Hungry Horse Project "to the extent of somewhere between 6 and 8 cents per hundred lbs on cement or somewhere between $90 to $120 per carload."

It is estimated that the project will require about 6,300 carloads.

The complaint alleges that the involved cement shipments exceeded 150,000 lbs per carload and request the ICC to prescribe reasonable rates for shipment of bulk cement, subject to a carload minimum weight of 140,000 lbs. The rates now charged are subject to a carload minimum weight of 50,000 lbs and are applicable alike to sacked and bulk cement shipments.

DPA outlines ground rules for design to save critical building materials

Suggestions worked out by Conservation Coordinating Committee for plans guidance are listed for engineers and architects

Mobilization agencies really started rolling last week on their conservation program for construction (ENR Aug. 16, p. 23). The Defense Production Administration laid down the initial ground rules for construction, as worked out by its Conservation Coordinating Committee.

Standing out among those ground rules are specific suggestions of the National Production Authority. NPA said that engineers and architects should adopt in their designs—wherever possible—practices that will conserve critical materials. For building construction, the agency listed these suggestions for the attention of designers.

1. Structural and reinforcing steel can be conserved in many one- two- or even three-story buildings by using wall-bearing masonry construction in lieu of structural steel frames or reinforced concrete frames.

2. For many types and kinds of structures, savings of about 50% in steel content are possible when reinforced concrete replaces structural steel.

3. Still additional savings in steel are effected by designing with timber in lieu of structural steel or reinforced concrete.

4. In structural steel design specific and appreciable tonnage savings are often possible through (1) welding (2) continuity of design and (3) appropriate use of high tension bolts in lieu of welding, rivets, or turned bolts.

5. In reinforced-concrete construction many steel conservation measures are available to the designer. Among them are:

- Flat slab construction which shows economies over beam and girder, pan, or masonry filler types.
- Use of square or rectangular columns with ties—in place of smaller columns with spirals—saves steel.
- High-strength concrete in columns with relatively more load carried by the concrete—in lieu of highly reinforced columns—should be investigated.
- Except in exceptionally long spans necessitated by functional requirements, heavy structural steel shapes may be saved by designing with reinforced concrete.
- Up to 25% in weight of reinforcing steel may be saved by welding heavy column rods instead of using spices dependent on bond value.
- Generally, deep beam and girder sections conserve reinforcing steel over relatively shallow rectangular or "T" members.
- Reintorced-concrete design or unit concrete design employing the principles of prestressing often further conserves steel.

7. For many uses, lightweight concrete and plaster aggregates may be successfully used to replace heavier aggregates, and thus lower quantities of structural or reinforcing steel needed for the load-carrying member and the foundations.

8. Bearing walls and masonry piers often can conserve steel as substitutes for steel columns.

9. Reinforcing steel may be conserved by the use of plain concrete or masonry, in place of reinforced concrete for footings, where soil conditions are suitable.

10. Fireproofing requirements are important for certain kinds of occupancy and for certain building locations, but that in many instances fireproofing of adequate resistance may be obtained by specific use of non-critical materials.

11. Use of masonry and asbestos cement for walls, or asbestos cement gypsum and precast concrete for roof covering, instead of ferrous metal or aluminum sheets is a recognized steel conservation measure that is especially applicable to industrial plant construction.

12. Alternative flashing such as metal-coated paper and flashing blocks are often good substitutes for 16-oz. copper flashings.

13. Many good alternative materials are available for office and stall partitions in lieu of steel.

14. Structural steel shapes may be conserved through proper use of alternative lintels, such as reinforced-concrete, reinforced-tile, brick or other substitutes.

15. In many structures the installation of elaborate ventilating, air conditioning, and cooling systems can be deferred to a later date, and applicants can still obtain building facilities which not only are practical but well suited for use during the emergency.

16. Alloys for the manufacture of low alloy, high alloy and stainless steels are in extremely short supply; therefore alloy steels should not be specified in building construction where satisfactory substitutes are available. Enameled, plated and even stainless-clad carbon steels conserve alloys when used in place of stainless steel.

17. It is often possible to defer installation of equipment such as elevators and moving stairways until these materials are in more plentiful supply.

- **Compliance sought**—Agency review of many requests for materials allocation and permission to commence construction does not reveal adoption of these basic conservation methods to any substantial degree, NPA stated. Because of this neglect, many construction projects which are needed will have to be deferred.
- **Measure given**—As a basic measure, NPA identifies the following seven design standards as good practice:

1. Where it is definitely necessary to design with structural steel, the design should be based on the "specification for the design, fabrication and erection of structural steel for buildings" (revised June 1949) of the American Institute of Steel Construction, 101 Park Ave., New York City.

2. Where it is advisable to design with reinforced concrete, the design should be based on the "Building Code Requirements for Reinforced Concrete"—(A. C. I. 318-51) of the American Concrete Institute, 18263 West McNickols Rd., Detroit 19, Mich.

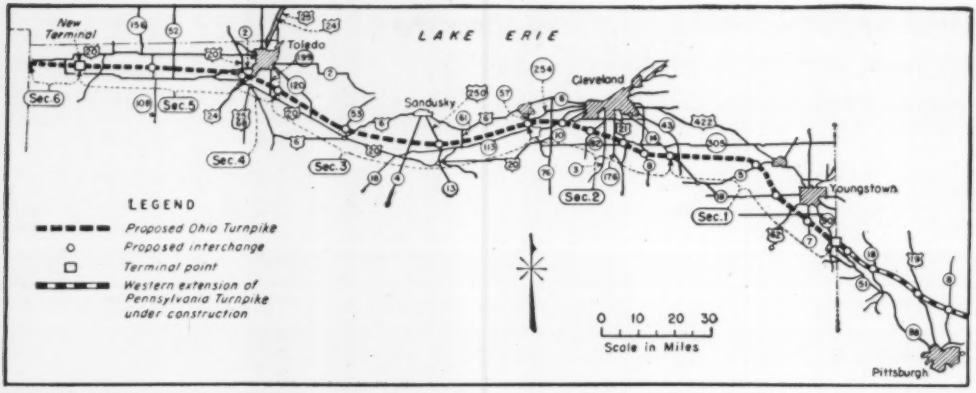
3. Where the design is with lumber of known grade and kind, it should be based on the "National Design Specifications for Stress-Grade Lumber and Its Fastenings," revised 1950, of the National Lumber Manufacturers Assn., Washington, D. C.

4. All plumbing work should be laid out and scheduled to use materials not in excess of the requirements set forth in the proposed "National Plumbing Code," June 1951, issued jointly by NPA and the Housing and Home Finance Agency.

5. All electrical work should be laid out and scheduled to use scarce materials not in excess of the requirements set forth in the "National Electrical Code," 1947 edition, of National Board of Fire Underwriters, 85 John St., New York City.

6. When the design with light gage steel made of cold-formed sheet or strip less than $\frac{1}{8}$ in. in thickness, it should be based on the "Light Gage Steel Design Manual" January, 1949 of the American Iron and Steel Institute, 350 Fifth Ave., New York City.

7. When floor or roof systems are designed with open-web steel joists, the design should be based on the "Standard Specifications for Open-Web Joist Construction" (as revised and adopted Oct. 20, 1949) of the Steel Joist Institute, 1346 Connecticut Ave., N. W., Washington 6, D. C.



OHIO TURNPIKE ROUTE SET—Exact route of the turnpike across northern Ohio was disclosed by the Ohio Turnpike Commission at its meeting last week in Columbus, Ohio. The 241-mi toll road will pass within 14 miles of the Public Square in the center of Cleveland. Public hearings to give opponents and advocates of the route an opportunity to present their views have been announced by Gov. Frank J. Lausche. Construction is planned to begin next April.

Ohio Turnpike decisions announced

Three vital decisions which advance plans for the $300-million toll road across northern Ohio, were announced last week by the Ohio Turnpike Commission.

• The Commission announced the exact route of the turnpike, from its junction with the western extension of the Pennsylvania Turnpike now under construction, to the Indiana state line. (See map above.)

• It rejected the revolutionary transposed traffic flow plan that was proposed, stating it would not be justified in adopting "a new untried concept of design in a $300-million project without confirming experience."

• It adopted a recommendation by the consulting engineers for the turnpike, J. W. Greiner Co. of Baltimore, that Portland Cement concrete pavement be used instead of asphalt paving. In making this move it rejected a request from asphalt interests for the opportunity to submit competitive bids. (ENR Aug. 30, p. 26.)

The Commission also accepted the estimates of construction costs and traffic and revenue prepared by J. E. Greiner Co. and Parsons, Brinckerhoff, Hall and Macdonald, of New York, referring them to Governor Frank J. Lausche and Highway Director Theodore J. Kauer for their final approval.

On Sept. 15, representatives of 170 investment firms will report to the Commission on financing the project so that tolls will pay off bonds to be issued for construction money.

• **Requirements stated**—It is estimated the 241-mi super highway will require 200,000 tons of steel and 5½ million barrels of cement. Application has been made to federal authorities for the steel. Cement has been allotted to the state by nine producers.

Turnpike integration and erection of motels and truck terminal facilities are being studied jointly by the Ohio, Pennsylvania and Indiana Turnpike Commissions.

$25-million tunnel okayed for Boston sewer system

Gov. Paul A. Dever of Massachusetts has signed legislation for construction of a $25-million sewage tunnel, to help rid Boston Harbor of pollution. The tunnel will run from Calf Pasture, Dorchester, to Deer Island in the harbor, where a new disposal plant is being constructed.

Under the new project, disposal facilities will be enlarged to serve the needs of both the North and South Metropolitan Sewage districts. The new deep rock tunnel will be 11 ft in dia, and near 25,000 ft in length.

Financing of the project will come from a bond issue, with payments assessed against Boston and other communities in the South Metropolitan Sewage district.

H-bomb housing starts

Work has begun on a $25-million housing development at Aiken, S. C., near the site of the new H-bomb plant. Contractor for the project is Gordy & Son, Wilmington, Del. Plans call for a 2,700-home community of single-story ranch type homes.

Charles H. Purcell, noted civil engineer, succumbs

A heart attack Sept. 7 unexpectedly ended the career of Charles H. Purcell, one of the nation's most able and famous bridge and highway engineers and, until his retirement six weeks ago, director of California Department of Public Works.

The most notable monument to his technical skill and administrative ability is the great San Francisco-Oakland Bridge for which he was chief engineer.

But the whole modern system of California highways also bears the stamp of his ability, for he was chief engineer of the highway division of the Public Works Department from 1928 until he became the director in 1942.

• **Began on bridges**—Charlie Purcell graduated in civil engineering from the University of Nebraska in 1906 and immediately began a bridge-building career.

Working first for railroads and then mining companies, he became bridge engineer for the Oregon Highway Department in 1912, took a leave of absence to direct the design and construction of the bridges on the Columbia River Highway for Multnomah County and then he returned to the state.

From 1917 until he went to California, he was district bridge engineer for the U.S. Bureau of Public Roads in the Northwest. Although Mr. Purcell had retired because of ill health, there was no expectation that he was so near the end of his notable career when he left his post with California Department of Public Works.

Morrison-Knudsen and city dispute over design of San Francisco tunnel

Contractor claims $6-million Broadway tunnel line to be unsafe in 'battle of experts'; city officials stand by their design

A "battle of experts" has flared out into the open between the city of San Francisco and Morrison-Knudsen Co., Inc. The battle is over adequacy of the concrete lining specified for the $6-million Broadway tunnel—a twin-bore traffic artery through Russian Hill—that is being built by M-K for the city.

The contractor has alleged that the Type B horseshoe-shaped lining specified for the 28½-ft-wide twin tunnels is inadequate and unsafe. The recommendation is made that Type A lining (a near circular section) be substituted. See drawing below.

• **Follow controversy** — The contractor's allegations and recommendation follow several months of more-or-less quiet controversy over the matter.

They were brought out in the open through release by the contractor to the press of copies of letters written Aug. 27 and 30 to the city's director of public works, city engineer and chief administrative officer.

Supporting M-K's stand is an opinion of a board of experts consisting of consulting engineers N. A. Eckart, O. W. Peterson and Carl R. Rankin and consulting geologist Chester Marliave.

• **Make no change**—City officials have taken no action on the contractor's request for design changes other than to say that they are convinced their design is proper and safe. However, as 12x14-ft pilot drifts have been driven (one clear through the 1,364 ft of tunnel length, two more partly through and a fourth just started), the city's "experts" have checked conditions disclosed as compared with those anticipated.

For example, Ole Singstad, New York consulting engineer who advised on the original design, revisited the tunnel in mid-August and again endorsed Type B lining.

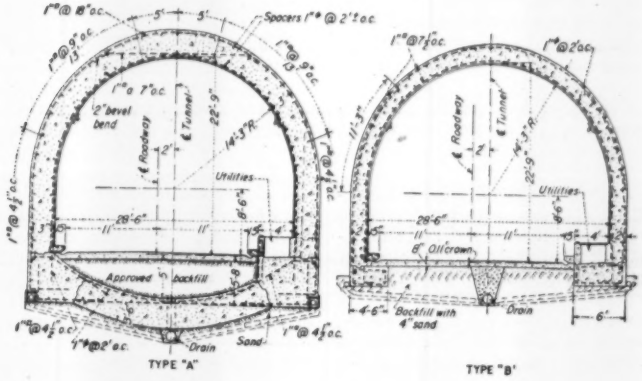
As a further check, John P. Buwalda, professor of geology at Cal. Tech, made a study in August to confirm for the city findings made before the project was designed by Hyde Forbes, consulting engineering geologist. Buwalda's report has not yet been completed, but it is indicated that he will find conditions to be at least as good and maybe better than were predicted in the original Forbes report. Forbes has been retained on a continuing basis throughout the work.

• **Design described**—Lining design was based on fresh blue sandstone. The 2-ft-thick Type B section is considered adequate by both the city and the contractor for such formation. Type A lining (3 ft thick) was called for at the portals where the ground was expected to be broken up.

The city has extended the amount of Type A lining to be installed an additional 70 ft based on conditions encountered.

The contractor supported by his experts claims that the entire length of each tunnel should be Type A lining because the formation is not fresh blue sandstone. The contractor believes that the formation is such that a squeezing and heaving action is to be expected. This action will, it is claimed, be aided by possible earthquake action and lubrication by seasonal rainfall.

The city's contention to date is that Type B lining is adequate for most of the tunnel. As it looks now, city officials will stand by this opinion and take full responsibility.



WHERE TWO DIED—Two men killed on this power shovel were among the nine dead and nine injured seriously when lightning prematurely exploded dynamite charges at the construction site of South Boulder Creek dam, Colo., Aug. 24 (ENR Aug. 30, p. 23). A coroner's jury has found that "negligence caused by insufficiently warning devices and safety measures" was involved on the part of Macco-Puget Sound Corp. At the hearing State Mine Inspector Harvey Chapman charged that holes were loaded when crews other than drillers were in the vicinity.

Seepage in New York City tunnel stirs controversy

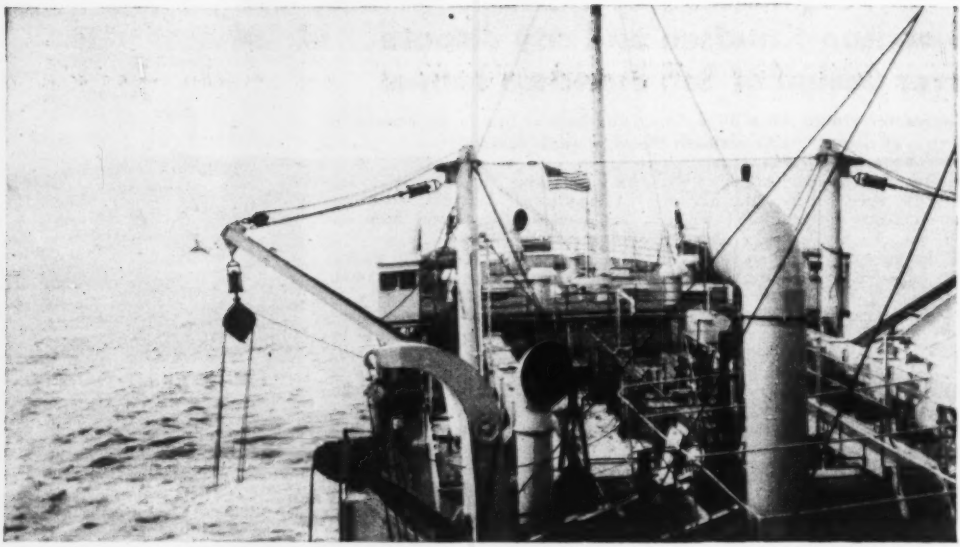
Salt water seeping into the 9,000-foot Brooklyn-Battery Tunnel in New York City, has become a subject for engineering controversy.

Ole Singstad, chief engineer for the city Tunnel Authority who was in charge of design of the $80 million Brooklyn-Battery Tunnel until 1945, says leakage through the cast-iron shell of the twin tubes is excessive along the two-thirds of the tunnel length that is driven through rock.

In a letter appearing in the August issue of CIVIL ENGINEERING, he states that if his specifications for a "continuous calking of asphalt-impregnated braided gasket and metallic lead placed in the calking recesses" had been followed when the tunnel was completed, it would be dry today.

His statement is stoutly denied by Ralph Smillie, chief engineer for the Triborough Bridge and Tunnel Authority which had charge of completion of the Tunnel. Mr. Smillie says seepage in the tunnel is not excessive and will probably decrease in time as the interstices fill up naturally with silt.

His position is supported by George E. Spargo, general manager of the operating authority who said Mr. Singstad's proposed calking was tested in 1946 and abandoned in favor of metallic lead calking.



OVER THE SIDE go the dredge pipes of sea-going hopper dredge Sandcaptain. And up comes a selected sandfill material for hydraulic deposit ashore. (ENR Staff Photo)

Sand brought back from watery grave saves money on hydraulic fill jobs

- **Water transportation—no traffic troubles**
- **Hydraulic placement—no compaction needed**
- **Cost advantage—10% under dry-fill method**

DOWN TO SEA IN SHIPS go contractor forces with specially equipped hopper dredges. Back to the land with sand they come to pump ashore hydraulically placed fill that defies further compaction.

Subgrades built on northern New Jersey's marshlands will include 11,000,000 cu yd of ocean-bottom sand when two adjacent jobs concurrently under way are completed.

One—contracts 19 and 22 on the New Jersey Turnpike in Newark—will take about 3,000,000 cu yd and soon will be finished. The other, runways A and D at Newark Airport, will take about 3,500,000 cu yd; fill for A is nearing completion while D, due to be finished next summer, is just getting started. The rest of the 11,000,000-cu yd of fill was placed in three separate contracts during 1949-50 for what was to have been N. J. Route 100—but now is to be a part of the Turnpike. This older fill is in Linden, about two miles south of the present work and is indistinguishably present in the distance of the second photo.

Savings of $2,464,700 were effected on the six contracts involved. Cost will total over $20,000,000 for hydraulically placing off-shore-dredge fill on sand-drain-stabilized soil. Savings are measured against second-low bids by contractors who presumably would have trucked in dry fill (see table). Hidden costs, also saved, are in the wear on city streets and disturbance of city traffic avoided through water hauling.

• **How it's done**—Construction Aggregates Corp., Chicago, delivers the sand—up to 1,000,000 cu yd per month. As joint-venturer with Peter Kiewit Sons' Co., Omaha, Construction Aggregates is placing fills up to 67 ft high and pumping as far as 17,000 ft from a shore booster station at the dredge berth in Newark Slip.

Two seagoing hopper dredges—the Sandcaptain and Sandchief—each make two round trips per 24-hr day in a seven-day work week. Meanwhile, the R. A. Brinkman, a cutter-head hydraulic dredge with 22-in dia pontoon discharge line works away in Newark Slip on sand deposited there by bottom-dump scows, loaded by dipper-dredge in bay waters.

In all, there are 65,000 ft of 20-in. spiral welded steel pipe on the two jobs—Turnpike and runways. Though being done for different owners, the two are close enough to be run as a single project by the contractors.

Sand pumped ashore from the hopper dredges—through the booster station and out along the fill—is carried in the line at the rate of 1,000 cu yd per hour. Pumped material is as high as 18% solids.

At the delivery end of the pipeline, pumped sand and water gush out into a prepared area of perhaps an acre or more, surrounded by a low, bulldozed dike. Bulldozers push the still-wet material about to help the water spread it evenly over the area.

A timber outlet structure at one point in the dike provides an overflow for the water. A battery of 20-in. pipes carries flow from the timber structure to natural drainage channels leading away from the fill. It is vital to prepare the area for proper drainage.

• **Water does compaction** — Water

CLEAN, WHITE, OCEAN-BOTTOM SAND streaks across marshlands of industrial northern New Jersey. It will carry sections of the New Jersey Turnpike and two new runways at Newark Airport, in distance at right. (Fairchild Aerial Surveys Photo)

draining out of the hydraulically placed sand has the effect of washing fine grains down into voids between coarse grains–giving the placed material a density near its maximum. In fact, no further compaction was required for hydraulic fill on the Turnpike.

On the airport, the owner, Port of New York Authority, attempted to compact fill further with an 80-ton pneumatic-tired roller. Tests showed this compactor's net effect on rougaly 100-lb-per-cu-ft material was an increase in density of less than 0.5 lb per cu ft at depths from 6 to 18 in. (Findings of U. S. Testing Laboratory, Hoboken, N. J.)

• **Care of subsoil**–Fill is placed in 2-ft lifts on the Turnpike, in 3- to 7-ft lifts on the airport, and the time interval between lifts is controlled to avoid too-fast loading that might cause a mud wave.

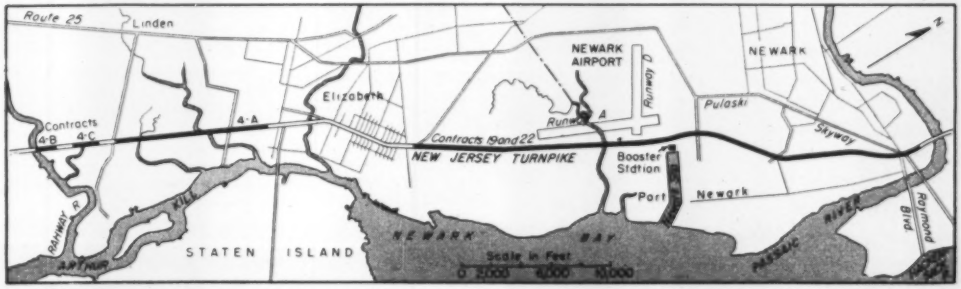
And, of course, the entire area filled on both jobs is being precompacted with vertical sand drains–2,000,000 lf of them under the whole 11,000,000 cu yd of fill. (For details of the sand-drain method of soil compaction see ENR Sept. 14, 1950, p 36, and July 21, 1949, p 42.)

Drains on 10-ft centers each way do down from 16 to 50 ft to form escape routes for ground water from the soft layer below as it is loaded, and overloaded, with fill above. Water is forced up the drains and out through a 3-ft thick horizontal sand blanket. The horizontal drain material is laid on top of an equally thick random mat put on the meadows to support construction equipment.

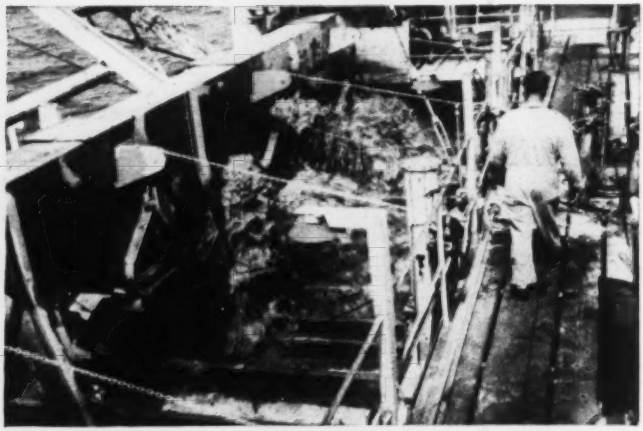
• **Nature grades the fill**–Sand drain material must be clean and coarse to fit specifications. Construction Aggregates Corp. finds suitable material ideally graded and naturally deposited in beds on the ocean bottom. As demand requires, a shipload of coarser material is dredged aboard and pumped ashore either to be deposited as stockpile for vertical drains or to be placed as horizontal drain.

Normal fill for above and below the coarse-grained blanket is a fairly fine sand, desirably graded for density, found about two miles off-shore. Although finer than the other, this is in effect a washed sand from which the extremely fine particles have been removed in the dredging operation.

• **Loading the dredges**–Both of the hopper dredges are self-propelled and

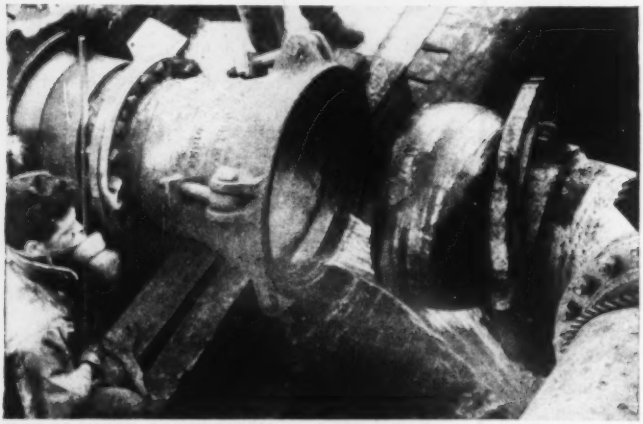


AIRPORT, TURNPIKE AND SLIP are conveniently close together. Black lines on pike show where hydraulically placed sand is now, or will be. Three sections at extreme left were placed from hopper dredges berthed in Arthur Kill. Most of present fill is pumped from Newark Slip, some from Passaic River near Raymond Boulevard.



SAND GUSHES ABOARD along with pumped water that drains off. Screens in the enclosed rectangular flume classify material and reject debris. (ENR Staff Photo)

FULL HOPPER. This photo taken just before pumping stopped and dredge pipes were raised shows forward hopper nearly full. Water draining off to ocean left sand so compact that crewman walking on it made faint footprints. (ENR Staff Photo)



SHIP-TO-SHORE CONNECTION is a flexible ball-and-socket joint through which hopper-dredge pumps empty the vessels of sand. Also ship-to-shore, and ship-to-ship, there is a radio-telephone system of communication for work coordination.

hydraulically self-loading—as well as self-unloading. (The method is a patented invention of J. R. Sensibar, president of Construction Aggregates Corp.)

Dredges anchor on the pumping ground and lower port and starboard suction pipes until suction hoods rest on bottom. Centrifugal pumps (300 to 700 hp) go to work drawing sand and water up through the two 24-in. pipes. The pumped material flows through enclosed rectangular flumes from which it is distributed into fore and aft hoppers in the cargo holds of the vessels. Inside the flumes are screens that reject all debris and oversize material. Gates spaced along the flume are opened and shut as necessary to control the trim of the hoppers as the load is pumped aboard.

Water overflows the hopper and goes back into the sea. Sand keeps accumulating in the hoppers. Overflowing water carries off excess fines through vertical spillways with overflow gates that are closed in succession as the level of sand in the hoppers rises. Thus an actual classification of the sand is effected; excess fines and oversize material are eliminated.

When the vessel is loaded, pumps are stopped and suction lines are raised and stowed on deck. The ship proceeds to shore. The loading operation (2,000 to 3,000 cu yd) takes 3 to 5 hours, depending mostly on whether a sufficient deposit of suitable material is found the first time.

• **Unloading**—There are three shore stations at which the hopper dredges now unload—two in Port Newark Slip and the third at the north end of Turnpike contract 22, on the Passaic River near Raymond Blvd., Newark.

Ship discharge connects to the shore pipeline by a double swivel joint which allows for listing and rising of the vessel as its load is lightened, as well as for tides.

Centrifugal pumps below deck force water through nozzles aimed at the surface of sand in the hoppers. It washes into vertical wells of 7-ft dia—one in the center of each hopper. Each well has intake gates controlled from the deck that are opened one by one from top down as the level of sand drops in the surrounding hopper.

Sand and water are proportioned in the well—percentage of each being kept such that solids won't clog in the overland pipeline. Control of the proportion permits pumps to push out a uniform material—no clogging and flushing.

(Hopper dredges don't normally pump themselves out. Their normal use is in channel maintenance work where they dredge as they move along at about 4 knots. When filled with

dredged solids, they go out to sea and dump the load through hopper-bottom hatches. The four hopper dredges owned by Construction Aggregates Corp. were Corps of Engineers vessels that had done their duty. They were bought and almost completely rebuilt, being fitted—as no others are—for the jobs of classifying and pumping their loads ashore.)

Hydraulic fill operations continue right through rainy weather that might halt dry-fill methods. The hopper dredges sail with their 40-man crews working three watches in all but the foulest weather.

Hydraulic Dredge R. A. Brinkman, working steadily in the slip, pumps ashore 600 to 800 cu yd of sand an hour—depending on the head and distance pumped. Discharge in a 20-in. line may or may not pass through the shore booster station.

All flow from the hopper dredges gets a pressure build-up from the booster station's 20-in. centrifugal pumps powered by one 2,000-hp and two 2,500-hp electric motors. Two boosters can be used in series.

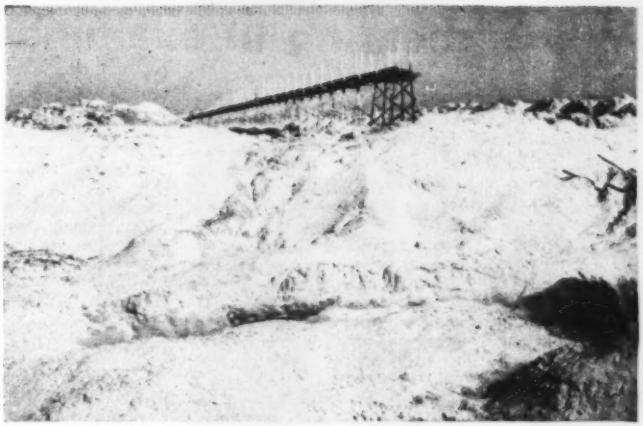
• **Fill dimensions**—Fill goes as high as 67 ft on this section of the Turnpike. It is broken up into small parcels, in places, by the many bridges involved. These include traffic interchanges at Raymond Boulevard and Port Street, both in Newark.

Turnpike fill totals over 6 miles in length, plus ramps and service areas. Top width is 125 ft, and bottom width varies from 165 to 250 ft. Side slopes, generally 1 on 2, require little trimming by mechanical means when placed hydraulically.

Airport runways being built are 7,200 and 6,400 ft long. There are also 7,000 ft of taxiways and a 500-ft addition to an existing runway involved. Runways have 260-ft top widths and 500-ft wide bottom lifts (blanket zones). Taxiways are 130 ft wide. All have 1 on 2 side slopes.

Project sponsor for the two contractors jointly doing the two adjacent jobs is Ezra Sensibar, vice-president of Construction Aggregates Corp. Gilbert Rocke is the company's chief engineer. Peter Berzina is general superintendent and Jim Williams is project engineer.

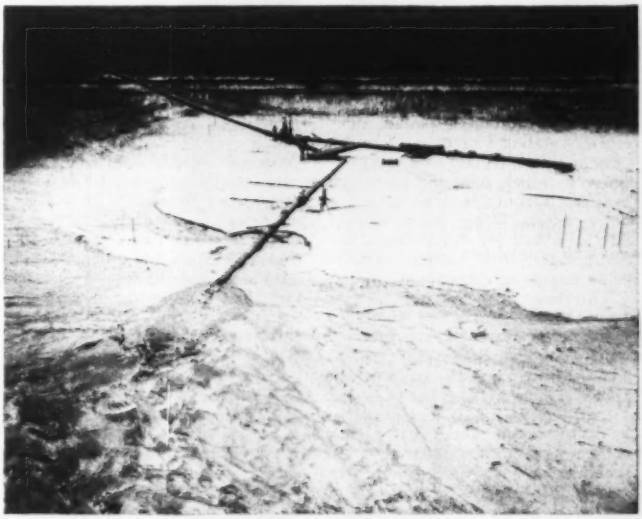
H. G. Decancq is resident engineer in charge on the airport work for the Port of New York Authority. John Kyle is PNYA's chief engineer. On the New Jersey Turnpike work, K. S. Kelly is resident engineer of sections being hydraulically filled for the consulting combine of Edwards and Kelcey, Frederick R. Harris, Inc., and O. J. Porter Co. Charles M. Noble is chief engineer of the Turnpike Authority.



BUILT UP ON TIMBER TRESTLE, pipe placing high fills does not have to be raised for each lift. It stays until fill reaches it, then the trestle is pulled out of the sand.

BIDS COMPARED

Contract	Construction Aggregates Corp. Bid	Second Low Bid	Difference
New Jersey State Highway 4A.....	$1,253,833	$1,920,977	667,144
New Jersey State Highway 4B.....	782,124	884,742	102,618
New Jersey State Highway 4C	400,849	476,774	75,925
Port of New York Authority NA25..	5,968,250	6,279,682	311,432
New Jersey Turnpike Authority NA19.	5,839,373	6,966,827	1,127,454
New Jersey Turnpike Authority NA22	6,581,634	6,761,741	180,107
	$20,826,063	$23,290,743	$2,464,680



JOURNEY'S END—At the end of the line pumped material, 18% solids, spews over the marshes to form a work mat for construction equipment. (Port of New York Authority Photo)

Who's cheating in examinations?

F. T. Mavis
Head, Civil Engineering Department
Carnegie Institute of Technology
Pittsburgh, Pa.

MUCH has been said about cheating in examinations recently—but little has come out of the current ruckus to help the student and teacher who are the principals in the process. Blame for cheating is laid in many places—the student's character, his early training and environment, panic, his fear of failing, his desire to get more than he deserves, and elsewhere.

But cheating in examinations cannot be stopped by imposing curbs and penalties for getting caught.

Only three "things" enter into cheating in an examination: The student, the teacher and the examination. It is obvious what the student can do to stop cheating—but it may be less clear what teacher and examinations have to do with it.

• **Teacher's Job**—The teacher's job is to do the best he can with a student whenever they are together, and to help the student get some satisfaction from the gains he has made. So before we lay all of the blame on the student who gets caught, let's look at the teacher and his examination.

There is a big difference between *teaching subject matter* to a student and *helping a student learn* the same subject matter. The second is much the more difficult job because it involves (1) finding out where the student is in his field of learning, and *what* interests him there (this is examination of a personal kind that will uncover something of mutual interest); (2) getting him to move on his own mind-power—not memory; (3) throwing a little light and encouragement on the mind-track he has made, however feeble it may be on an absolute scale; and (4) stimulating a mutual desire to make more mind-tracks while momentum is up.

Therefore, of many objectives of examinations in a given subject I would stress three: (1) to find out what a student knows; (2) to rank a student according to how much he knows or how well he knows it; and (3) to help a student find out what he doesn't know. The first two imply end points rather than education, but the third embodies continued learning.

• **Memory tests good?**—One need not be a teacher to test memory of published "facts" and of procedures leading to "one answer."

Examinations of this type are commonly prepared by teachers and by others who would advise teachers how they should do their job. These examinations are usually "closed-book" examinations which aim to sample much of what has been discussed in the course, and it is these examinations which tempt some students to glance furtively up their sleeves or around the room.

One advantage of these examinations is that each question has one "accepted answer" (it may be right or wrong), and it is implied that a mental process can be scored mechanically—even by machine. These examinations are prepared secretly, kept in locked files, proctored alertly, scored mechanically, market rigidly.

• **A better test**—But a teacher can prepare a better examination—one which his students from top man to flunker will discuss with interest, and accept without post-mortems to raise grades.

After some years of observing and experimenting in civil engineering and applied mechanics subjects I am persuaded that examinations in these areas can be made so that proctoring is unnecessary. Questions are few (often only one situation), but the student must be able to draw on all of his background to reach a decision, to support it with a chain of reasoning and evidence, and to test it for adequacy. He may use any books or notes in the examination.

The "open-book examination" is no novelty. By encouraging students to bring their notes, textbooks, or any other aids, to examinations we have done much to control the panic factor in examinations—a factor that may be closely correlated with cheating. Students are urged not to cram for examinations, and word soon gets around that last-minute surveys of examinations in fraternity or library files might better be forgotten in favor of a little sleep.

What about cheating in open-book examinations? It would take time and a rare kind of genius to cheat if the examination is a test of mind rather than memory, because the open-book examination begins to test where the book ends.

Naturally, teaching must be geared to make open-book examinations worthwhile to student and teacher as they review civil engineering problems together. The teacher must not overload the student with too much subject matter. He must stress fundamentals and reasoning from them with a minimum of emphasis on factual knowledge and vocational know-how. In a continuum of informal examinations he sets and resets the stage on which the student develops his initiative and originality. In these settings the student understands that he is being examined, and that he is examining someone else every time he talks about his field and whether with teacher, another student or a future employer.

• **Accent on learning**—In brief, I would accent *learning* rather than *being taught*; I would accent *testing myself* rather than *examining others*. I would put it up to the student (and teacher) to learn to think and speak for himself—and to learn to work with others. From this perspective the student and teacher are on the same side of the table—and both can gain much by looking at learning (teaching) and testing (examining) as necessary steps in educational teamwork. These steps can be interesting, stimulating, and exciting if both maintain that perspective.

Formal examinations may well be examinations of much the same "open-book" type—tests of reasoning, chain thinking, and reaching a decision where there are many answers —right *and* wrong. Here, too, the student must make a decision, choose his position and defend it.

The biggest job a teacher has is to help a student learn to think and speak for himself—individually; and to help students to work together.

As a civil engineer-teacher, I am convinced that teachers can do much to prevent cheating among their students by reducing the temptation to cheat in examinations. I would urge being resourceful and sincere—(1) in helping each student to learn to think and speak for himself; (2) in helping students to work together in teams; (3) in removing the burden of memory during examinations by opening books and notes freely to anyone; (4) in trying to find out how the future engineer uses his mind under pressure freed from panic—and to help him use it better.

As teachers, we have a good bit to do in developing either thinking citizens or smart quiz-kids. Whether we help to develop men who are capable of reasoning their way to decisions they will stand for, or whether we develop glib grown-ups who can repeat "the accepted answer" is in our hands. Here we must choose—because we can't do both. Let's not cheat the student by giving him an examination that tempts *him* to cheat.

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In Canada: MICRO PLASTICS, Ltd., Acton, Ont.
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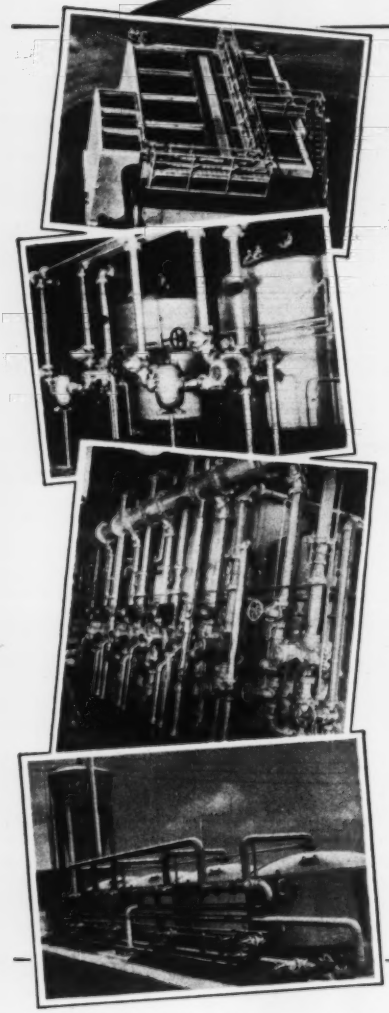
4 means to one end... SOFT, CLEAR MUNICIPAL WATER



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The Permutit Precipitator softens and purifies water, removing turbidity, color, taste, odor, alkalinity, silica, and fluorides. It works by precipitation, adsorption, settling, and upward filtration. This operation saves you up to 50% in space, 40% in chemicals, and 75% in treatment time.

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The ion exchange (zeolite) process is the simplest method of softening water. Permutit is the only manufacturer of all types of ion exchangers and equipment.

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PERMUTIT

WATER CONDITIONING HEADQUARTERS FOR OVER 38 YEARS

Control dam and two new locks leading to a good harbor area upstream will create a . . .

New Mississippi port for Minneapolis

By 1957, Minneapolis, Minn. expects to see its fondest dream come true—a new pair of locks past St. Anthony Falls. This $20,500,000 project will, in reality, create a new life line for the city.

For the past 11 years, barge traffic has been able to come up the Mississippi all the way from New Orleans—only to find wharfage space at Minneapolis severely restricted, with no chance for expansion. In 1940 the Corps of Engineers completed its 9-ft canalization of the Mississippi from St. Louis to Washington Ave. bridge in Minneapolis, at a total cost of $150 million.

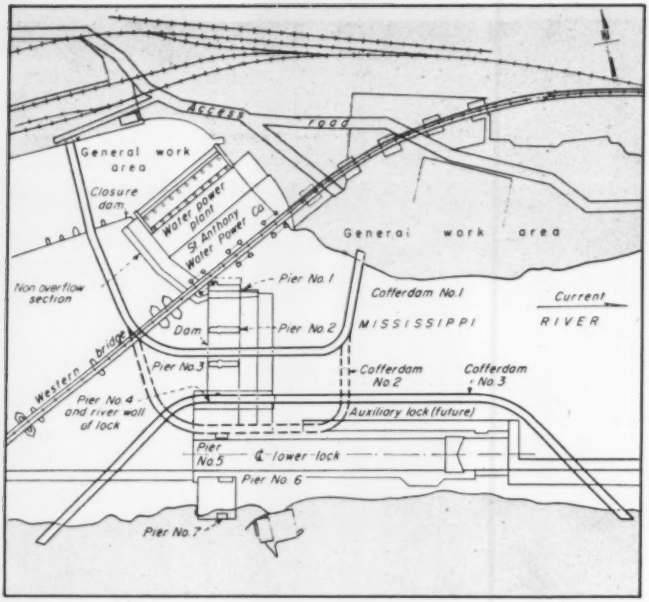
This was a great boon for the neighboring twin city of St. Paul—with its level river banks and good dockage facilities—but it didn't do much good for Minneapolis due to a topographic situation.

• **Can't expand present wharf**—Immediately below the St. Anthony Falls the Mississippi is confined between high, steep bluffs. There are limited wharfage facilities at the present river terminal under the Washington Ave. bridge but there is no chance to enlarge them.

On the other hand, there are ideal wharfage conditions above the falls. There are over 800 acres available within the city limits extending three miles upstream on both sides of the river. This land is not expensive; some of it being tax-delinquent. The land slopes gradually to the river making it ideal for wharfage and shipping facilities—once provisions are made to lift barges past the falls.

There is no danger of flood that low-bank territory usually suffers because the falls take care of excess

TURBULENT WATERS of the Mississippi rush past a big cofferdam which protects the area for stage-one construction of the dam and lower lock.



THREE COFFERDAMS will be needed—two for construction of the dam and one for the lower lock. Restricted working area, congested existing power-development facilities, and a railroad cutting across the dam site; all add to the difficulties of construction.

waters. This is an important advantage in the Minneapolis harbor project, which is part of the Corps of Engineers' St. Anthony Falls project.

Work on the St. Anthony Falls project was started in the fall of 1948. The first contract entailed 40,000 cu yd of dredging just below the falls. A second dredging contract, completed in November, 1950, removed 280,000 cu yd of material in the approach channel to the lower lock and dam.

There will be four other major stages of construction before the entire project is completed in six or more years, providing sufficient federal funds are made available. They are: (1) the lower lock and dam, now under construction; (2) the upper lock; (3) upper pool dredging; and (4) intermediate pool dredging between the two locks.

As part of the improvement, alterations will be made to 10 of 11 bridges in the upper harbor area to provide sufficient horizontal and vertical clearances. This work will be done by Minneapolis and the railroads that own these structures.

FACTUAL DATA—**St. Anthony Falls Project**

Item:	Dimensions:	Federal Cost:
Channel dredging	150 ft wide, 10 ft. deep (min.)	$ 3,000,000
Dam	520 ft long	
Lower lock	56 x 400 ft chamber, 25-ft lift	6,048,000
Upper lock	56 x 400-ft chamber, 49-ft lift	7,663,000
Alterations to utilities and railroad bridges	Clearance: 26 ft vert., 150 ft horiz.	2,144,000
Guide fences		650,000
	Total federal cost	$19,505,000
	Non-federal cost	1,000,000
	Total cost	$20,505,000

Locks and dam:

Excavation	287,000 cu yd
Concrete	191,000 cu yd
Reinforcing steel	10,500,000 lb
Structural steel	3,000,000 lb
Structural steel (Guide fences and railroad bridge alterations)	8,800,000 lb
Total length of dredging improvement	4.6 mi.
Channel dredging	1,400,000 cu yd

• **Biggest lift on the Mississippi**—Both locks will be 400 x 56 ft, the same size as lock and dam No. 1 located just downstream from the city. The lower lock will raise boats and barges 25 ft. The upper lock will provide a 49-ft lift—the biggest step of any lock on the Mississippi.

The hydraulic system for the lower lock will be somewhat different from the standard Mississippi River locks in that the lock will be filled and emptied through a single wall-discharge diffuser system. The upper gate of the lower lock will be a submergible tainter gate. The lower gate of this lock and both gates of the upper lock will be conventional miter gates.

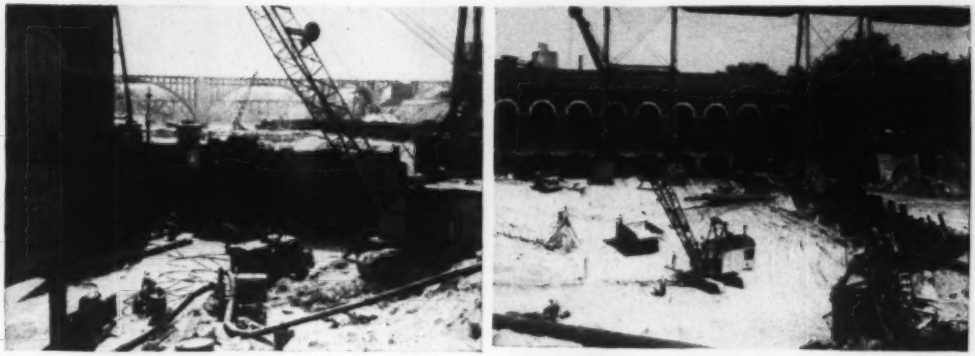
The tainter gate was adopted in order that the lower lock can be used as an auxiliary controlled spillway during flood periods and to expedite filling of the lock chamber. The tainter gate will be electrically operated; the miter gates will be moved by hydraulic pressure.

The new dam, to be built in conjunction with the lower lock, will contain four tainter-gate sections. Each tainter gate in the gravity-type structure will be 56 ft long by 19 ft high, operated by a fixed electric hoist mounted in a service bridge.

The dam will be 290 ft long from the rear of Pier No. 1 to the center line of Pier No. 5. Provisions will be made for the future construction of an auxiliary lock in bay No. 4 which is adjacent to, and riverward of, the lower lock to be built under the current contract. Pier No. 4 rests on the 14 ft wide north wall of the future auxiliary lock.

In addition, there will be a 230-ft length of non-overflow section on the left side of the river. This non-overflow section will join with Pier No. 1 and angle upstream tying in to the upstream and riverward corner of the foundation of the St. Anthony Water Power Company's powerhouse.

• **Three cofferdams needed**—As shown in an accompanying sketch, three cofferdams will be required for the construction of the lower lock and dam. Cofferdam No. 1 is complete and excavation is underway for the



CUT-OFF WALL enclosing non-overflow section of dam is driven in close quarters (at left), while construction of the dam proper (at right) necessitated temporary removal and re-erection of an existing railroad trestle.

north portion of the dam and the non-overflow section.

The contractors have had a rough time with this cofferdam which is made up of a river arm of seventeen 28-ft dia steel sheet pile cells and earth-fill shore arms. Flood waters last spring necessitated flooding it.

Later, it was discovered that leaky seams in the St. Peter sandstone beneath the cofferdam prevented dewatering of the enclosed area. How the contractors corrected this situation by driving a full-circle of steel sheet pile cutoff wall inside the cofferdam will be told in a later issue.

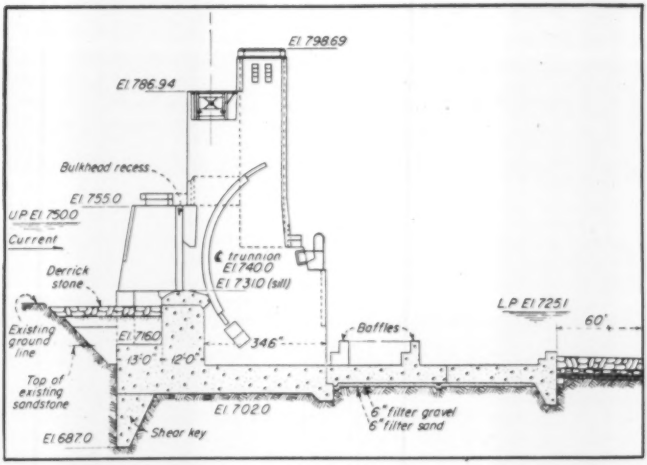
• **Cofferdam timetable**—The lower lock and dam contract is considerably behind schedule but is expected to catch up by next February. Cofferdam No. 2 will be started this summer. Contract specifications require its removal, as well as the first cofferdam, by Feb. 15, 1952. The first two cofferdams are primarily for the construction of the dam, including the non-overflow section.

Cofferdam No. 3—for construction of the lock—is required to be started by July 1952. It will remain in place during the spring highwater of 1953. The contract construction schedule calls for its removal, and completion of the entire $5,500,000 lower lock and dam contract by Dec. 31, 1953.

• **Simple river diversion**—River diversion during construction should not be complicated. Cofferdam No. 1 does not interfere with the normal flow of the river. When cofferdam No. 2 is in place, the river will flow between it and the right bank.

While cofferdam No. 3 is in place—during construction of the lower lock—the river will have a free-flow diversion through the three 56-ft wide tainter gate bays. The 15-ft high gate sills will not be built until construction of the lock is sufficiently advanced to permit the river to flow through it.

Both dredging contracts of 1948-50 were performed by Dunbar and Sullivan Dredging Co., Detroit. The current work of constructing the lower lock and dam is being done by Johnson-Kiewit; a joint venture of the Al. Johnson Construction Co., Minneapolis, and Peter Kiewit Sons' Co., Omaha. Harry L. Mundy, Jr., is project engineer and J. H. King, construction superintendent.



MAIN SECTION of the new dam will be 112 ft high from top of pier parapets to bottom of shear key. It will contain three 56-ft long by 19 ft high tainter gates for the overflow section of the dam.

• **Model studies made**—The dam and locks were designed by the St. Paul District, Corps of Engineers, based on model studies conducted at the University of Minnesota's St. Anthony Falls laboratory, located a short distance upstream from the dam site.

Col. L. G. Yoder, St. Paul District Engineer, is in overall charge of the project. Lt. Col. A. H. Lahlum was assistant district engineer, until transferred recently to the Chicago District. H. M. Anderly is chief technical assistant to the district engineer. Laboratory investigations were conducted under the supervision of M. E. Nelson, chief, Hydraulics Section.

Other Corps of Engineers personnel connected with the project include E. J. Christensen, chief, Construction Division; Emil Silverman, project engineer; C. W. Buending, resident engineer; G. E. Lyon, chief, Engineering Division; and F. E. Mullen, chief, Design Branch.

THE VETERANS HOSPITAL at New Orleans (lower left) is being built in the same area as the Charity Hospital (upper right) which developed trouble due to settlement before the building was completed.

New Orleans hospital foundations designed to end settlement trouble

Robert P. Linfield and H. Mortimer Favrot

Favrot, Reed, Mathes & Bergman, Architects
New Orleans, La.

FOUNDATIONS of the hospital now being built for the Veterans Administration in New Orleans differ radically in certain respects from any put down heretofore in that city, where adequate foundations are most difficult to obtain.

The new hospital stands almost across the street from the Charity Hospital, which has a total settlement of about 18 in. since it was built in 1939 and a differential settlement of 12 or more inches. Because of this, the Corps of Engineers, acting as the construction agency for the Veterans Administration, instructed the architects to use every possible means to prevent excessive or unequal settlement.

Preliminary investigations of the site were made by the New Orleans District of the Corps of Engineers; and for the foundation studies, the two architectural firms working the project—the authors' firm and Faulkner, Kingsbury & Stenhouse of Washington—had the assistance of the staff of that district, the Vicksburg soils laboratory, the Washington office of the Corps of Engineers, and Arthur Casagrande of Harvard University.

These investigations included sinking five test holes to depths of 100 and 150 ft, from which undisturbed samples of the soil were taken and subjected to exhaustive laboratory tests.

Findings of these studies and a geologic survey of the area are generalized in the drawing. Underlying soil consists of alternate sand and clay layers to a depth of about 100 ft, and below this depth, clay that is more or less uniform in character. Laboratory tests indicate that these upper clays are subject to considerable compression under load while the hard clay has at one time been weathered and is not presently subject to ready deformation under load.

These findings were indicated by the geologic study which classified the material above the weathered (hard) clay as of recent deposit and, therefore, not yet well consolidated.

• **Floating structure considered**—Use of a so-called "floating structure" was considered, but due to the high water table and unstable soil conditions it was decided to use a combination of floating and pile foundation.

A study of the soil data indicates

that to drive piles other than to the sand or clay located at approximately 80 ft below the surface would invite considerable settlement. Hence it was decided to drive test piles of various types to that depth and load at least one of each type to failure.

The types of piles driven were wood, steel-pipe, composite wood and poured-in-place concrete, and tapered hollow steel. One of the latter was driven without jetting a depth of about 53 ft below ground level, but driving was so hard that no other driving without jetting was attempted. Jetting was carried through the second sand layer, after which driving continued until resistance was satisfactory or until the pile was well seated in the third sand level.

Test loads up to 150 tons were applied to five of the piles and all settlement curves were quite similar up to 70 tons, at which one of the piles slipped approximately one inch, with no lessening of resistance, after which the curve again approximated that of the other piles.

It was feared that the use of jets in this locality might cause sand boils, so a system of peizometers was installed in order that ground water pressure in the two upper sand layers could be determined. This pressure varied slightly over a period of several months but did not seem to be related to either local rainfall or the stage of the river. The pressure in the two sands was indicated at a normal of approximately four feet below mean sea level, or about seven feet below lot level.

• Local contractors consulted—After all test data had been assembled, a conference was held with representatives of several local contracting firms present. These construction men told their experiences with heavy foundation work locally and offered opinions as to the problems that would be met in the proposed work. These opinions and experiences were reflected in the final design, and were proof of the value of practical experience to the technical man.

The final design of the foundation was based on the following conditions:

1. Piles—wood or cast-in-place concrete driven at least to the third sand layer. If, however, resistance was not developed in the third sand layer, driving would continue into fourth sand layer; but in no case deeper than 92 ft below mean sea level.

Wood piles to be designed for a 25-ton load and concrete piles for 50 tons. Pile spacing to be four feet except that wood pile spacing could be slightly less than this figure, if necessary.

2. A deep excavation to reduce net load would be used. Excavation to be about 22 ft below lot level. This depth seemed to be the greatest practical depth possible in this soil. The very soft subsoil combined with a high watertable makes it difficult to hold the sides of deep excavation in the area.

Excavation of the basement to 22 ft below lot level would take a load of 73,000 kips off the underlying soil, thus cutting the additional load to be carried by that soil from 134,000 kips, the estimated weight of the building, to 61,000 kips.

3. A mat foundation would be used in lieu of individual pile caps. The mat made possible the rather wide pile spacing and provided for relocation should stumps prevent driving to pattern.

4. Sub-basement walls would be made thick and well reinforced to give stiffness to the foundation.

5. In order to insure the gain of hydrostatic pressure, as well as protect the foundation concrete from ground water, the waterproofing would be a membrane applied to the exterior.

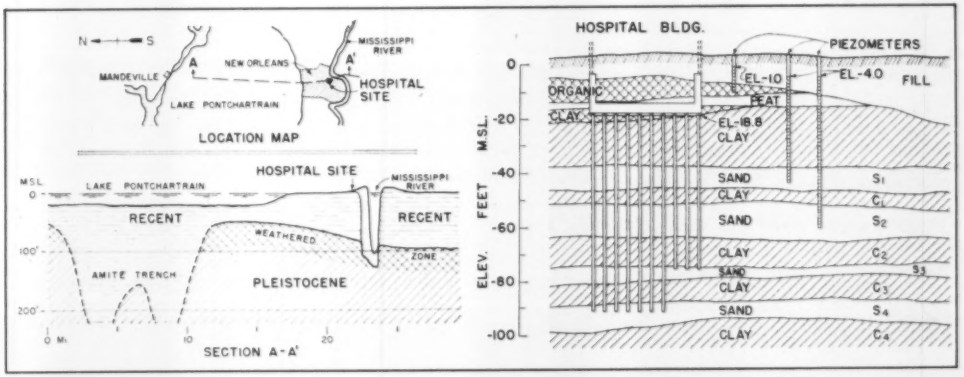
• Leveling course under mat—This requirement of membrane waterproofing applied to the exterior of the foundation mat made necessary a leveling course over the piles on which to place the membrane prior to construction of the mat. The leveling course was designed as a 12-in. thick slab, mesh reinforced, with a slight slope to all edges to provide drainage. This was to receive the membrane, and an asphalt protective course two inches thick was provided to give a working surface to place the reinforcing.

• Special jetting provisions—Because the hydrostatic load is so high in this area, it appeared necessary to do the jetting from a level not lower than minus six. Hence the contractor was given the option of excavating to final grade, filling the hole with water and driving from a floating rig, or excavating not lower than the six-foot level and driving from that point, using a follower to drive to cut-off.

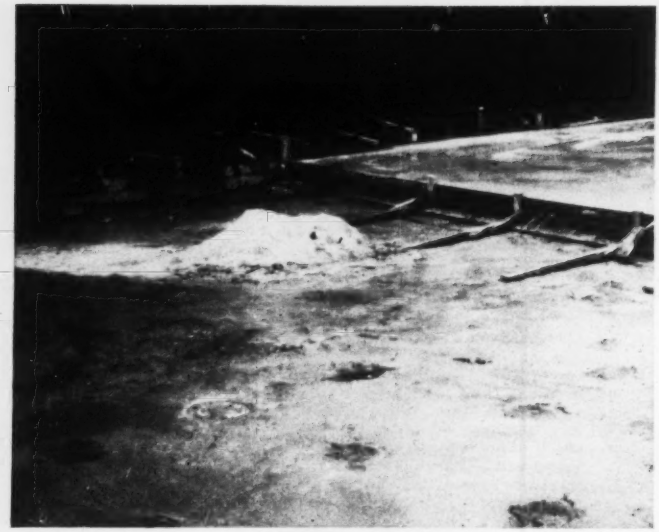
Excavating to final grade (about 20 ft below lot level) without flooding would have permitted the contractor to get rid of buried stump, which are a source of trouble in the New Orleans area, but it involved some risk to surrounding buildings resulting from loss of ground due to flow of groundwater in the sand layers. The contractor elected to drive first and then excavate.

• Wood piles selected—Bid prices favored wood piles and they were selected. Jetting was done with a rotary jet having a 70-ft long "Kelly" (sliding torque shaft) operation and a 14-in. fishtail bit. It was mounted on a crawler-type crane (¾-yd, gasoline operated), the Kelly being powered by a take-off from the crane.

Piles were driven with a 5,000-lb, single-acting steam hammer in 70-ft



GEOLOGICAL FORMATION of the New Orleans area and a detailed cross-section (right) through the site of the new Veterans Administration hospital. In the latter, the clays marked C 1 and C 2 are soft, C 3 is a hard oxidized clay and C 4 is a hard clay.



WATER COMING UP THROUGH PILES was disposed of successfully by spreading sand over a layer of concrete flush with the pile tops, shown here, covering that with building paper, and adding a second layer of concrete to complete the seal.

leads hung from a 70-ft boom. The bottoms of the leads were fixed by adjustable lead pipes, all mounted on a conventional turntable.

• **Driving procedure**—The holes were jetted through the second sand, after which the jet crane placed each pile in the hole ready for the pile driver. The driver then moved on to drive the pile, using a special steel follower to obtain the required depth.

This procedure proved most satisfactory as the rotary jet made a vertical hole to lead the pile to its proper location. The bit cut through the tree trunks and roots without being deflected. Tree trunks were numerous in the upper 20 ft of the depth and were found as low as 50 ft below street level. Without the drill, the jet and pile would have been deflected by many of these timbers.

The driving was accomplished without relocating any piles and the pattern was nearly perfect though the piles were followed ten or more feet below the driving level.

• **Water pressure slows excavation**—Excavation was started as soon as driving of the building piles and sheetpiles had progressed beyond one wing. It was necessary to restrict operations at the final excavation level because of the high hydrostatic pressure in the first sand layer. This pressure showed a sharp increase during jetting operations. It was feared the unbalance between water pressure and overburden would result in an upheaval of the leveling course.

After concrete for the first section of the leveling course had been placed it was found that water leaking through the piles came on through the concrete and kept the surface of the slab too wet for application of the waterproofing. This leaking varied from pile to pile and was more pronounced in the yellow-pine piles than in the fir piles.

In succeeding sections, various methods of diverting the water were tried without satisfactory results. The scheme finally used was to pour the seal course to pile cut-off level, place a layer of sand covered with building paper, and on top of this pour the leveling course. The sand diverted leaks long enough for the concrete to set.

At two points the leaks through and around the piles were sufficient to make it necessary to provide relief by means of a pipe diverting the drainage to the outer perimeter of the foundation line.

• **Tiebacks instead of bracing**—An interesting element of this job was anchoring the sheetpiling for the excavation to batter piles driven outside the excavation. This made heavy timber cross-bracing unnecessary and greatly facilitated the placing of concrete in both the foundation slab and the walls.

• **Satisfactory results**—All this work was done early last year. Since then the building has been erected on the foundations just described and will be completed about March, 1952. Settlement of the building to date has been well within the contemplated amount and is substantially uniform.

This work has proved that it is possible and practical to use a deep basement in the New Orleans area to relieve the substrata of part of the building load. It also has taught local engineers how to drive piles through the sand layers and stumps that have given them trouble in the past.

The entire project is under the direction of Col. Chas. G. Holle, district engineer, New Orleans District. The general contractor is Robert E. McKee, General Contractor, Inc. of Dallas, Texas.

Perlite mix properties available in table form

Strength and heat-conductivity coefficients are now available for five standard mixes of perlite concrete. The table giving this information was developed by the Perlite Institute, 35 West 53rd St., New York 19, N. Y.

For example, if an architect or engineer desires a heat-transmission coefficient of 0.93 for concrete, he would find on the first line of the Perlite Institute concrete-mix table the mix and corresponding wet density, as poured, that will have this value. A contractor can determine from the table how much cement, perlite, water and air-entraining agent are needed for each cubic yard of this concrete. In addition, the compressive strength and the weight of the dry concrete are given for this mix.

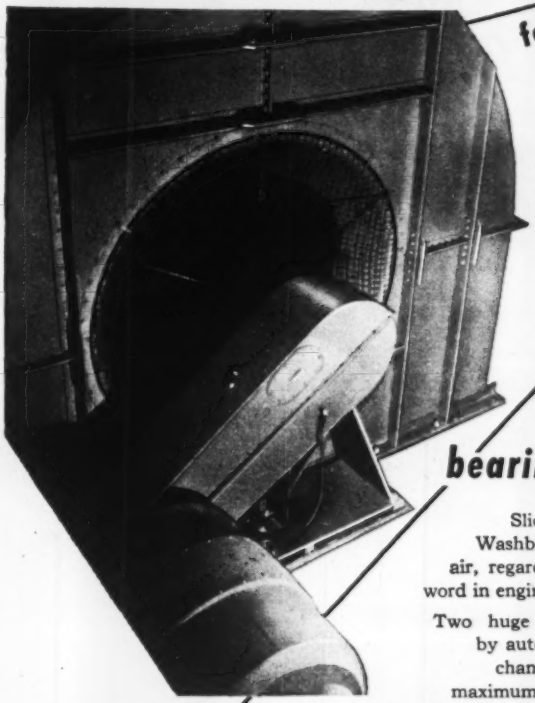
It will be noted that when perlite is used as an aggregate, the mix is very light in weight and the compressive strength is low. This type of concrete is intended for use where light weight, fire resistance and insulation is of more concern than strength.

For best results, the Perlite Institute recommends the following mixing procedure:

1. Put required amount of water and air-entraining agent in mixer.
2. Add portland cement. Mix to uniform slurry—usually about ½ min.
3. Add perlite and mix until desired workability is obtained—usually about 2 min.

Other desired properties of strength, insulation and density may be obtained by varying the cement content or air entrainment or by addition of supplementary aggregates. It might be wise to consult with the nearest perlite manufacturer on non-standard mixes or for information on mixed-in-transit concrete.

NO "LUNG SPOTS"
for Houston's Washburn Tunnel



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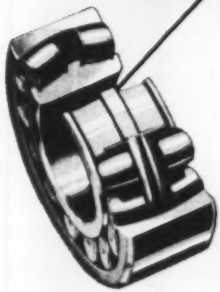

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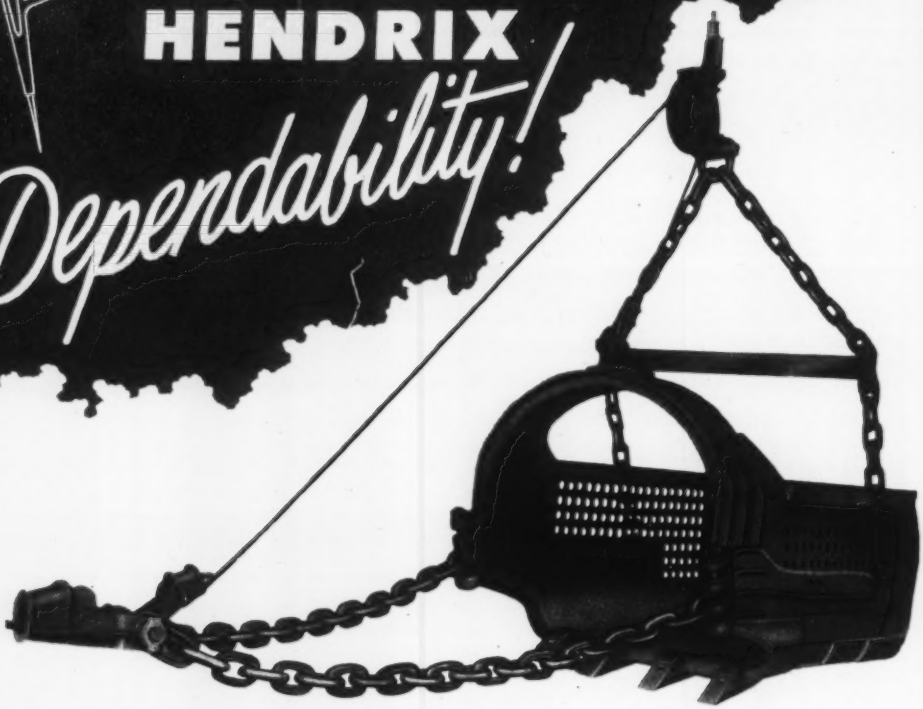

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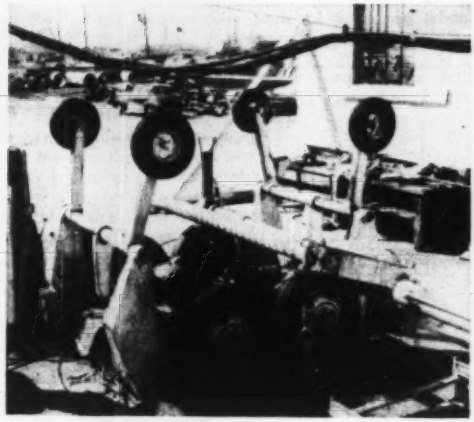
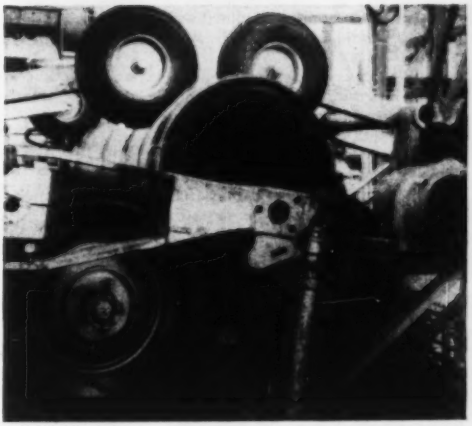


SPINNING MACHINE centrifugally casts high strength reinforced concrete pipe. It vibrates the mix as it is placed and compacts it under corrugated roller, center.



CASTING MOLD spins between rubber-tired trunnions (bottom) that roll it and pneumatic stabilizers (top) that hold it down against action of high-frequency vibrators.

Concrete-pipemaking method gets first use on sewer job

ANOTHER METHOD of centrifugally casting roller-compacted concrete pressure pipe has had its first application on a $345,000 sewer project for Nampa, Idaho.

Developers of the patented process, called Cen-Vi-Ro, claim the addition of vibrators as its chief advantage over a similar Australian method described in ENR Oct. 6, 1949, p 24. They also claim a cost advantage for pipe of its quality—30-in. sold for $4.91 per ft in Nampa.

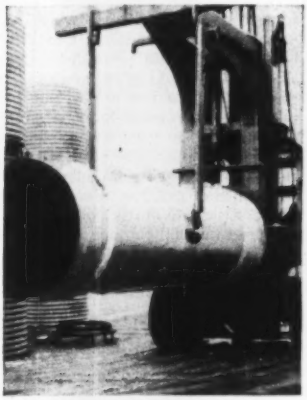
Earlier methods, developed by Rocla, Ltd., Melbourne, Australia, have used: (1) a spring loaded vibrating roller in the bottom of the centrifugal casting mold; (2) a rigid roller doubling as shaft on which the casting mold hangs loosely and turns.

The Cen-Vi-Ro Process puts the roller back in the bottom of the mold, loads it with hydraulic jacks, adds high frequency vibrators, then holds the revolving mold down with four arms mounting pneumatic tires. Drive-wheels revolving the mold are also pneumatic-tired, to absorb vibration.

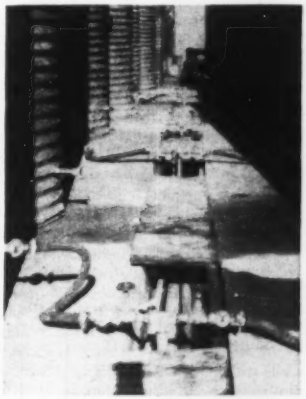
• **Quantity, quality produced**—Interceptor and outfall sewer lines in Nampa's new system required nearly 20,000 ft of pipe, which are being made in 10-ft lengths by the new method: 11,300 ft of 30-in., 4,300 ft of 24-in. and 3,920 ft of 18-in.

A dry concrete mix (w/c ratio: 3 gal per bag) with a 5-bag-per-cu-yd cement content was used to assure strength and impermeability. Aggregate used was 70% coarse, 30% sand.

• **Casting rig**—The casting mold, outer form of the pipe, is ¾-in. steel plate with a smooth finish that requires no



FINISHED PIPE, removed from machine by lift truck with special device for hooking lugs on molds, goes to curing area.



CURING JACKETS are corrugated steel shells with closed tops and inlets near bottom for hook-up to steam lines.

FINISHED PRODUCT with soaped ball-and-spigot contact surfaces is placed in new sewer system of Nampa, Idaho.

oiling. It has but one seam closed with latch bolts and opened with small hydraulic jacks.

A steel reinforcing spiral stiffened by four longitudinal bars tack-welded at its quarter points has steel spacers that keep the reinforcing properly positioned in the mold. Cast steel rings form the bell and the spigot. Small lift trucks fitted with rubber-faced grips handle the mold, place it on the portable casting machine.

Concrete is fed from a 52-cu ft paddle-type mixer into the revolving mold on a cantilevered belt conveyor. Three high-frequency vibrators on the underside of the mold go to work as it is spun.

• **Speedy handling**—Casting takes 10 minutes for a 10-ft-long pipe. When the casting is completed, one lift truck removes the finished pipe from the machine while another moves in with the next prepared mold. About two minutes are spent in this handling operation.

The finished product goes to the curing area, in Nampa a 240x140-ft concrete slab. There, pipe lengths are set vertically on their bell ends. Three U-shaped lugs on the bell form keep the pipe off the curing slab, permitting circulation of steam under and into it.

• **Curing** – Corrugated steel pipes standing 13-ft high and having cone-shaped covers are used as curing jackets. Each such container is fitted with a thermometer and an inlet pipe for steam.

Pipe is cured for a total of 22 hours in steam at 140 to 150 deg F. Normally, casting molds are removed only after complete curing. But pipe has been taken out of the molds after only two hours of curing without any apparent ill effect.

• **Pressure, strength trials**—Pipe at Nampa, manufactured to resist external hydrostatic pressure, showed its impermeability in internal pressure tests performed. After 22 hours of steam curing it withstood 40 to 50 psi internal pressure for 72 hours with no sign of moisture coming through.

When investigated for strength by the standard three-edge bearing test, a 10-ft length of 30-in. dia Cen-Vi-Ro pipe with 2¼-in. shell thickness and a steel area of 0.22 sq in. per lf withstood an ultimate load of 8,400 lb per ft. ASTM specifications for 30-in. culvert pipe with a 3½-in. thickness reinforced 0.31 sq in. per lf call for 7,500-lb-per-ft ultimate load and a 0.01-in. crack at 5,000 lb. per ft. The 0.01 in. wide crack appeared at 4,400-lb-per-ft in tests made at Nampa.

Flexible but reasonably leak-proof joints are achieved with a round rubber gasket that fits against a raised shoulder on the spigot as it is forced snugly into the bell. It is an adaptation of an unpatented joint assembly which originated in England.

• **Developers**—Cen-Vi-Ro Process was developed by George R. Jessen, and Carl Chanlund, respectively president and master mechanic of Utah-Idaho Concrete Pipe Co., Salt Lake City, and Idaho Concrete Pipe Co., Inc., Nampa. The former firm holds patents on the process. Information for this article came from M. W. Loving, consulting engineer of Glenview, Ill.

In Nampa, the sewer under construction was designed and is being supervised by Raymond J. Briggs and Associates, Boise consulting firm. Mountain States Construction Co. and Statewide Plumbing and Heating Co., both of Pocatello, Idaho, are contractors doing the work.

Notes on legal decisions

Summaries of decisions relating to construction work prepared by I. Vernon Werbin, counselor at law and engineer, New York, author of Legal Phases of Construction Contracts (McGraw-Hill Book Co.)

Specifications not followed

The New York Court of Appeals, in its opinion in a case[1] involving the question of full performance under a contract, stated: "The courts never say that one who makes a contract fills the measure of his duty by less than full performance. They do say, however, that an omission, both trivial and innocent will sometimes be atoned for by allowance of resulting damage, and will not always be the breach of a condition to be followed by forfeiture."

In this case the contractor brought an action to recover a balance unpaid on a building contract. The owner claimed that the contractor had not fully performed the terms of the contract in that in doing the plumbing work, he had used a brand of pipe different from that called for by the specifications. Failure to use the prescribed brand resulted from an oversight on the part of the subcontractor who had done the plumbing work. In fact, the architect did not discover that a different brand of pipe had been used until some time after the building had been completed.

The architect then directed the contractor to remove the pipe and replace it with the brand of pipe called for by the specifications. At the time this order was issued the pipe had been encased within the walls of the building and its removal would involve the taking down of a large part of the completed structure at a very considerable cost.

Consequently, the contractor refused, and upon refusal of the architect to issue a final certificate, brought action to recover the balance due under the contract.

At the trial, the contractor offered evidence to show that the brand of pipe installed in the building, though made by another manufacturer, was the same in quality, in appearance and in market value as the brand prescribed in the specifications. The court refused to admit such testimony and directed a verdict in favor of the owner for the amount that it would cost to remove the pipe and replace it with the brand of pipe called for by the specifications.

The contractor appealed from the judgment so entered, and the appellate court reversed the same, holding that under the facts as set forth in this case, the damages that the owner was entitled to recover was not the cost of replacement, which would be very large, but the difference in value of the structure as built and the value if built in accordance with the terms of the contract, which was either nominal or nothing.

The court in its opinion pointed out that while ordinarily the owner is entitled to the money which will permit him to complete the structure, an exception is made in cases where the cost of completion is grossly and unfairly out of all proportion to the good to be attained. "When that is true, the measure is the difference in value. Specifications call, let us say, for a foundation built of granite quarried in Vermont. On the completion of the building, the owner learns that through the blunder of a subcontractor part of the foundation has been built of granite of same quality quarried in New Hampshire. The measure of allowance is not the cost of reconstruction. There may be omissions of that which could not afterwards be supplied exactly as called for by the contract, without taking down the building to its foundations, and at the same time the omission may not affect the value

(Continued on page 48)

READER COMMENT

Hydro work in Brazil

Sir: I should like to call attention to two fairly important errors in the article published in your July 5 issue entitled "Triple Water Diversion for Brazil."

In the drawing on page 28 is shown a "Projected Underground Plant" with headwater elevation 89 meters and tailwater 45 meters. This is not planned to be an underground station. One of the two plants shown as "Underground Power Plants" is now under construction, the other is "projected."

In the last paragraph of the article, S. Morgan Smith is indicated as fabricator of pressure shaft lining. Actually this major job is being done by A. O. Smith Corporation of Milwaukee, Wisc., which is designing and fabricating this item. The work includes the 6.10-m diameter shaft lining, branches to the turbines and branches from the valves to the pressure shaft, altogether about 3,500 tons of steel.

F. T. Matthias,
Manager, Construction Department, Companhia Brasileira Administradora de Servicos Tecnicos, Rio de Janeiro.

Room for study

Sir: The article by Thomas R. Camp in your August 9 issue is timely in pointing out the important place that fluid mechanics should play in the field of sanitary engineering. Certainly there are innumerable applications which have hardly been touched upon, and I fully agree with Mr. Camp that "This field is wide open for study."

However, in the comments under part-full flow of sewers I must take strong exception to the statement that "Recent experiments on culverts at the University of Minnesota tend to indicate that the friction factor does not change with depth of flow; other runs in the same series of experiments indicate a 30% increase in friction factor as depth decreases to 0.4 the pipe diameter." Actually the tests showed quite consistently that when the Manning's "n" is used as the friction factor index the results for all depths of flow and all types of culverts tested are remarkably consistent. The value of n is constant for all part-full depths in any particular culvert up to and including full-flow conditions.

The tests were made on full-scale circular concrete conduits of diameters 18 inches, 24 inches, and 36 inches with different entrance conditions, and also with corrugated metal pipes up to 36 inches in diameter, both circular and deformed shapes.

Possibly in the comparisons made by the author of the article the Darcy "f" was used as the friction factor index. The f-value does vary with the depth of flow, but this is not a normal factor to use for open-conduit calculations. In any case, these results are also quite consistent, showing systematic variations in all tests from part-full to full flow conditions.

The results of the tests to which Mr. Camp refers have recently been issued as Technical Papers Nos. 3, 4, and 5, Series B of the St. Anthony Falls Hydraulic Laboratory.

Lorenz G. Straub
Director, St. Anthony Falls Hydraulic Laboratory
Minneapolis

Omission

Sir: Referring to the account by the writer commenting on the similarity of basic ideas that governed the design of floating wharves at Palua, Venezuela and Manaos, Brazil (ENR Aug. 16, 1951 page 52) it is believed that through some oversight the essential points embodied in the third wharf at Manaos have been overlooked. As edited the account merely reads: "And a year later a separate float 80 ft. wide by 600 ft. long was installed."

It is felt that what should have been emphasized is that the third float carries on it a transit shed of steel framing with steel louvre walls about 50 ft. wide by 550 ft. long and that this float is connected to the quay wall by a steel pontoon bridge 550 ft. long by 40 ft. wide, which rises and falls automatically with the stages of the river. The transit of cargo from the floating transit shed to the quay is accomplished by a double trackage system upon which operates, shuttle fashion, trains of cars moved by a tail rope system at a speed up to 850 ft. per minute, the ropes being operated by an electrically driven winding engine for each track. In view of the complete success of this floating transit shed and the pontoon bridge over a period of forty years it is thought that this feature might be of more than passing interest to engineers who have to meet conditions similar to those at Palua and Manaos.

Charles Jay Seibert
Washington, D. C.

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(*Continued from p. 46*)

of the building for use or otherwise, except so slightly as to be hardly appreciable. [Citing cases.] The rule that gives a remedy in cases of substantial performance with compensation for defects of a trivial or inappreciable importance, has been developed by the courts as an instrument of justice. The measure of the allowance must be shaped to the same end."

(1) Jacob & Young, Inc. v Kent, 230 N. Y. 239.

Rights of subcontractors

A subcontractor brought an action against the owner and his engineers to recover damages sustained by reason of alleged fraudulent refusal on the part of the engineers to certify that the work had been properly performed.

The owner engaged the engineers to draw plans for the repairing of a pier, to supervise the work of contractors, and to certify to the owner the payment to be made by him to the contractors. The general contractor employed a subcontractor to replace the siding of the superstructure. His contract provided that payment for his work was to be made by the general contractor when payment to the general contractor for that part of the work had been approved by the engineers. The engineers had full knowledge of this agreement, but after the subcontractor had completed his part of the work, refused to issue a certificate approving payment by the owner to the general contractor for that work. Consequently, the subcontractor brought an action against the owner and engineers to recover the amount due him under the subcontract.(1)

Attorney for the engineers moved to dismiss the complaint on the ground that the subcontractor had no right of action against either the owner or his engineers since no contractual relations existed between them; also that the subcontractor could have no rights under the contracts between the owner and his engineers and with the general contractor. The court denied the motion, holding that while the complaint did not set forth facts establishing any binding agreement, express or implied, between the engineers and subcontractor, it did set forth facts which if established at the trial, would give the subcontractor a right of action against the engineers, without regard to any right of action in contract.

The court in its opinion stated: "As to considerations of general policy, the mere refusal by an architect or engineer to issue a certificate of performance does not of itself give rise to a cause of action. Where a willful tort (any wrongful act for which civil action can be brought), however, is committed by an architect or engineer, he may not be relieved of liability by a plea that the maintenance of an action therefor would cause members of those professions to act at their peril."

The court in its opinion further stated: "The engineers contend that the subcontractor makes out no cause of action for wrongful inducement of breach of contract. The first cause of action alleges that the engineers wrongfully refused to certify to the owner that the general contractor was entitled to be paid for the work, thus inducing a breach of the contract between the owner and the general contractor. Since the subcontractor was not a party to that contract, it might be held that no interference is shown with known contractual rights possessed by the party suing.(2) It should be noted, however, that a subcontractor has quasi-contractual rights against an owner, which is the basis upon which his statutory lien is founded, and it may well be that in this case inducing a breach of contract between the owner and the general contractor constitutes an interference with the known quasi-contractual rights of the subcontractor."

(1) Unity Sheet Metal Works, Inc. v Farrell Lines, Inc., N.Y.L.J. Dec. 7, 1950.
(2) Associated Flour Haulers & Warehousemen, Inc., v Hoffman, 282 N. Y. 173.

Acceptance of defective work

The owner of a house brought an action against a contractor to recover the sum paid to the contractor for doing some painting and wall papering work in the house. The contractor, in the action interposed the defense that the owner was estopped from claiming that the work had not been properly done, since the owner paid for the work and accepted the same after making an inspection of it.

The evidence produced at the trial supported the owner's claim that the work had not been properly performed. About two or three weeks after the work was completed, the paper on the walls and ceilings began splitting throughout the house, and the paint began peeling from the woodwork, apparently because the contractor had failed to properly prepare the woodwork before painting by scraping off the old paint, which according to the terms of the contract he had agreed to do.

As to the defense interposed by the

(*Continued on p. 51*)

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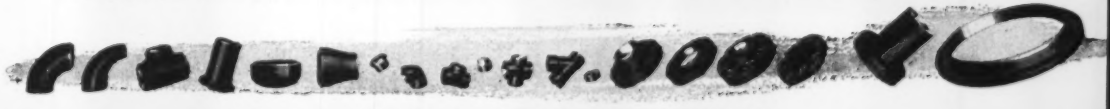

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Now engineering designers can take full advantage of the steel savings and lower construction costs possible with the new A305 reinforcing bars. The American Concrete Institute has just recently revised its "Building Code Requirements for Reinforced Concrete" to utilize the improved bonding strength of the A305 bar. The new requirements permit higher bonding stresses with the A305 bar and practically eliminate hook anchorage. As a result, the revised code makes possible even more durable reinforced concrete structures at a lower cost.

However, before you can share in these benefits, your local code must be changed to conform to the new A.C.I. standards. Take action now, to have your code modernized!

1. Higher Bonding Stresses Permitted

Because A305 bars have higher, more closely spaced lugs than older bars, they provide a greater bond between steel and concrete. The code was changed to permit use of this improved bond.

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Because of higher bonding strength, the need for end hooks is eliminated in practically all cases, and steel and fabrication costs are reduced.

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Higher bond strength also increases the efficiency of splices, reducing the steel required.

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(Continued from p. 48)
contractor that the owner having made an inspection of the work before it was accepted and paid for, was estopped from claiming that the work had not been properly performed, the court stated: "In regard to the plea of estoppel, as a matter of law, one who pays the price after inspecting and approving the work done, cannot thereafter recover a return of the price on the ground that the work was improperly done. That rule is to be applied, however, in cases where the owner has full and ample opportunity to discover whatever may be defective in the work before approval and payment, and not in cases, such as the instant one, where the defects are latent, or developed and became manifest only after a lapse of time."

The trial court concluded that the work done by the contractor was of no benefit whatever to the owner and was absolutely worthless. Under these circumstances, the court directed a verdict in favor of the owner for the full amount paid to the contractor. This judgment was affirmed on appeal.

(1) Lorino v Charles Rowe Co., et al., 48 So. 2d 103, Court of Appeals of Louisiana, Oct. 16, 1950, citing Delaney v Morter, 11 La. App. 310, 123 So. 515.

Right to lateral support

The owner of land, in making an excavation on his own property that may endanger a building on his neighbors land, is bound to use reasonable care in the prosecution of his work and is liable for injuries to his neighbor's property resulting from his negligence. However, he is under no obligation to shore up his neighbor's house, nor is he under any duty to give his neighbor notice of his intention to excavate on his own property.[1]

In some large municipalities, certain statutes have been enacted to protect the foundations of adjacent property. Thus, in New York City, a statute[2] provides that where one makes an excavation more than 10 ft. below the curb he must, at his own expense, preserve and protect from injury any structure the safety of which may be affected by the excavation.

When any work is done in a street that is not for the improvement of the street, but to promote an enterprise of the city, such as building a subway under the street, the property owner has the right to the lateral support of the land in the street even though he does not own any part of the street.[3]

(1) Whitemore v Fago, 93 N. Y. S. 2d 672, (Supreme Court, Steuben County, N. Y., May 25, 1949.)
(2) Section C 26- 385.0 of the Administrative Code of the City of New York.
(3) Matter of Rapid Transit R. R. Comrs., 197 N. Y. 81.

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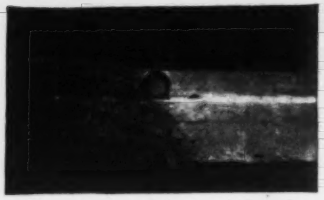

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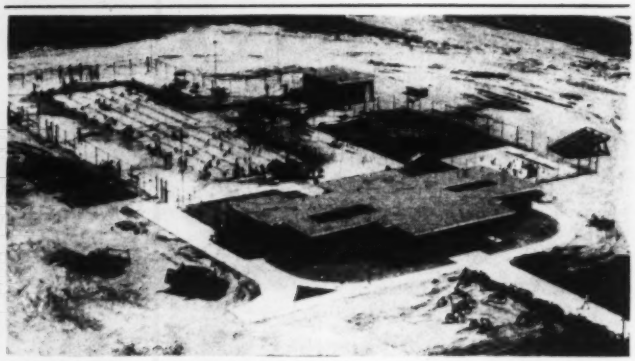

A COOL SPOT IN TEXAS—This new $200,000 municipal swimming pool in Texas City, Tex., was dedicated last month in the midst of the over 100-degree hot spell in that state. This event climaxed the recreational reconstruction program begun after the city's disastrous waterfront explosion and fire of April 16, 1947. Since that catastrophe the population of Texas City has grown from 17,000 to 25,000—Wide World photo.

Coronado and Vista, Calif. fear severe water shortage

The city of Coronado, situated on a peninsula forming San Diego Bay, and the city of Vista, inland in San Diego County, Calif., appear to be the two communities most seriously situated with regard to the current water shortage in the southwest area of the state.

San Diego, a member of the Metropolitan Water District of Southern California through the San Diego County Water Authority, has been providing Coronado's principal supply. The water has come via the San Diego Aqueduct from the Colorado River, despite the fact that Coronado is not a member of the water authority or of the Metropolitan Water District.

This has been accomplished through an exchange arrangement under which some Colorado River water was supplied Coronado by San Diego and San Diego used an equal amount from its Otay Reservoir supply. The Metropolitan has warned San Diego not to continue to supply Colorado River water to Coronado when its Otay reservoir supply runs low.

At San Diego City Council direction, City Manager Edward Campbell has warned Coronado that the Otay Reservoir will be drawn down to muddy water in six months. Coronado will then have as its only supply its own wells in the Tiajuana River Valley.

In the case of Vista, the Vista Irrigation District has ordered rationing of 50 gal a day for domestic use and one acre inch a month for agricultural use because yield is lower from its wells. It has applied for membership in the water authority, but the authority has indicated it can admit no new members until the second barrel of the San Diego Aqueduct is built. A bill to have the Navy construct the project is now pending in Congress.

Trenton would cut costs with flexible macadam

Trenton, N. J., city fathers are studying the possibility of using flexible macadam bases instead of rigid concrete in the city's street paving program, to save money.

For the first time since 1930, the city asked for and received alternate bids on this year's $460,000 street paving program. Contractors were asked to submit prices on repaving seven city streets, using 9-in. macadam base with a 3-in. topping of fine aggregate bituminous concrete, or 8-in. concrete base with three-inch topping of sheet asphalt.

The call for alternate bids was issued over the protest of City Engineer Joseph E. English, who has insisted that macadam bases are not suitable for urban streets where many utility lines are located under the roadway. He has specified an 8-in. concrete base in all street paving work done in Trenton since 1930.

However, Mayor Donal J. Connolly, who also heads the city's Department of Public Works, overrode the city engineer and ordered the alternate bids to be received. He said he was impressed by the fact that the New Jersey Turnpike Authority had found

(*Continued on page 54*)

NEW TYPE STRAIGHT READING METER REGISTER

MANY ADVANTAGES OFFERED

A great many water works men prefer the straight reading or cyclometer type of water meter register due to the ease and accuracy with which it can be read. But the design of straight readers produced in the past has been such that they have frequently proved troublesome and unreliable in service. All these difficulties have now been overcome according to engineers at Rockwell Manufacturing Company, by a revolutionary new register design.

Mechanical Features

In the new Rockwell straight reading register the number wheels are recessed to receive the pinions, thus making it impossible for the pinions to get out of line and bind. The wheels themselves are of heat proof plastic. These wheels are also impervious to corrosive attack. The numerals are impressed in black against a white background to provide good visibility. The dial plate is made of stainless steel with all indications permanently etched into the surface. This stainless steel plate will not chip, crack or discolor.

Easy to Reset

One of the important features of this register design is the ease with which the numerals can be returned to zero. This is desirable when reconditioned meters are put back in service to simplify record keeping during the life of the meter.

To reset the Rockwell register it is only necessary to remove a simple spring clip after which the pinion and number wheel shafts will easily slide through the brackets to return to the zero reading.

Large Red Test Hand

The Rockwell straight reading register is fitted with a large red center test hand that sweeps the entire outer circumference of the dial face. This large hand aids in calibrating meters and detecting small flows. It also may be used to demonstrate leaky fixtures to doubtful consumers.

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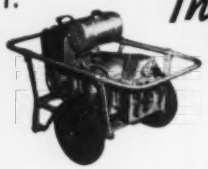

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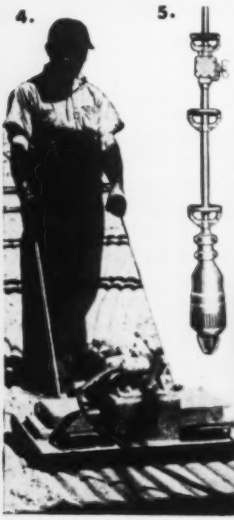

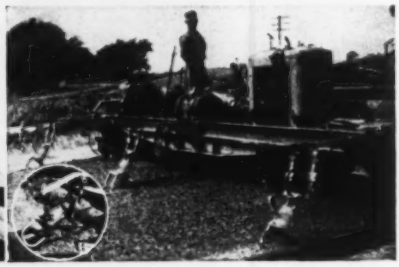

Municipal . . .

it could save $4,500,000 by using the macadam-base construction on New Jersey's 118-mile toll road. With the cost of street building going up, Connolly said he was "willing to try anything that looks like a money saver."

At first glance, the bids which were received Aug. 16 would seem to indicate that the city will save approximately $75,000 by utilizing the macadam base in its street program this year. The Kingston Bituminous Products Co. of Kingston, N. J., which operates one of the East's largest quarries, was low bidder on six of the seven street jobs. Its bids all called for construction using the flexible type base. The Union Paving Co. of Philadelphia, which bid only on rigid base paving, was low bidder on the seventh project.

The total of all seven low bids was $373,697, compared with an engineer's estimate of $460,000.

After the bids had been opened, Mayor Connolly said the city commission would study the proposals before deciding which type of contract to award. But he noted the bids this year represented a street paving cost of approximately $4.60 per sq. yd. compared with a cost of $6.21 per sq. yd. in 1950. Last year the city specified concrete bases in its $500,000 paving program.

Connolly also noted that the average price per sq. yd. of 8-in concrete base pavement with 3-in sheet asphalt topping, which was $6.21 in 1950, had dropped to $5.72 this year. He said this reduction in the face of rising labor costs and two advances in cement prices "must be attributed to competitive bidding."

Arizona communities spend $8 million for sanitation

In Arizona, with a population of less than 750,000, communities have spent more than $8,110,000 in sewer projects in the postwar period—probably more per capita than any other state.

Topping the list is the $4,500,000 Pima County Sanitary District at Tucson. Phoenix has spent more than $1,500,000 in expansion of its sewage plant. Both the Tucson and Phoenix operations are activated sludge plants.

With every sizable community in the state already serviced, or with plants building, only the suburban districts of Phoenix and Yuma are not served with sewage plants.

In the Phoenix area the situation is becoming acute. Sanitation engineers have warned of a saturation of cesspools, particularly in new subdivisions.

City plans water supply for 50 years ahead

A series of programs requiring expenditures up to $9,000,000 have been recommended to Phoenix, Ariz., as a means of providing adequate domestic water supplies up to the year 2000.

Prepared by the Phoenix engineering firm of Headman, Ferguson and Carollo, the report was ordered by the city in January when indications pointed to a drouth crippling economic and municipal growth.

When conditions worsened, the engineering firm speeded the report and recommended a program for use of water from the Salt River for the first time. Previously, Phoenix has relied on a single prime source, the Verde River, and from the Scottsdale wells 14 mi. east of the city, and from wells within the city.

The firm recommended increase of production and transmission capacity from a "dubious 64 mgd to a safe 114 mgd."

The report showed that the maximum daily demand upon the water works to date for 1951 has exceeded already the daily demand for any previous year by almost 10% even before the season of intense summer heat had begun. Despite maximum productivity, depletion of storage has begun and curtailment of water usage must be started.

The city currently is supplying an estimated 176,000 persons through 45,000 meters in an area of about 30,000 acres. Engineers estimated the population in this area will grow to 320,000 in the next 25-50 years and that the area served by the water department may have 420,000 persons at the end of 50 years.

The report stressed that the single source of prime supply, the Verde River, was not practicable. In addition, the city has no control over the storage of surface waters on either Verde or Salt rivers, both of which are under the jurisdiction of the Salt River Valley Water Users Association, which uses the bulk flow for irrigation purposes.

Municipal league differs with N. C. road commission

This year's North Carolina legislature passed the so-called Powell Act which empowers municipalities to deal with the highway commission to get their street work done if they prefer, rather than do it with their own forces or engage private contractors. The commission was given authority to enter into agreements with the municipalities.

(Continued on page 56)

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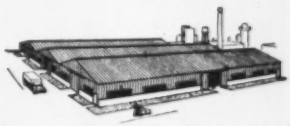
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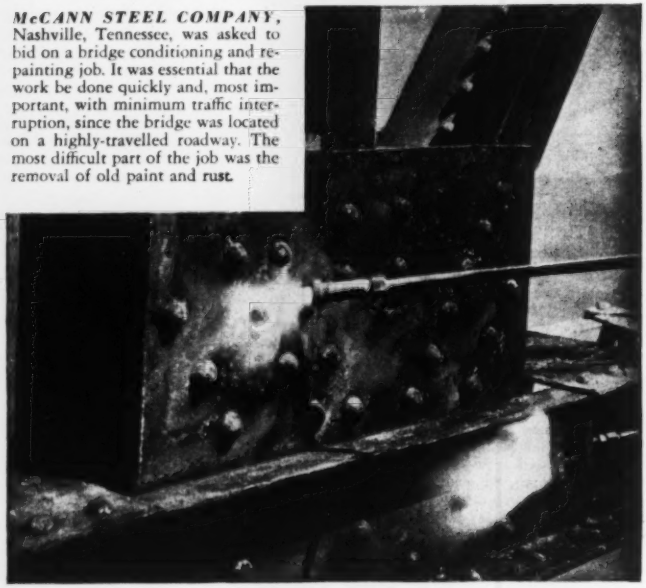
Oxyacetylene Flame Cleaning speeds bridge repainting —without traffic interruption

McCANN STEEL COMPANY, Nashville, Tennessee, was asked to bid on a bridge conditioning and repainting job. It was essential that the work be done quickly and, most important, with minimum traffic interruption, since the bridge was located on a highly-travelled roadway. The most difficult part of the job was the removal of old paint and rust.



F. T. Wilson, Airco technical sales service representative, recommended oxyacetylene flame cleaning to remove scale and old paint prior to repainting. This process, requiring minimum equipment, leaves a warm, clean surface, which is conducive to a long-lasting paint job. Notice in the photograph how the rivet heads are being cleaned with a round tip and the flat surface is being conditioned with a wide flat tip.

The entire bridge was cleaned most satisfactorily, without disrupting traffic too greatly. City officials were very pleased. Bids for reconditioning a second bridge across the Cumberland River will specify the use of flame cleaning.

If you have steel structures exposed to the elements, requiring long-time paint protection, investigate the advantages of Airco oxyacetylene flame cleaning. For technical service or copies of bulletins ADG-1066A, ADG-1067 and ADR-57, describing this process, please write your nearest Airco Office.

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Municipal . . .

But the commission has announced that it will not enter into contracts with municipalities to help them spend their Powell Act funds on work on streets that are not part of the state highway system, or connecting links for state highways. The decision was protested by the North Carolina League of Municipalities as unfair to small towns which had planned on having the highway department do the paving work.

However, the commission has adopted a resolution establishing a policy of limiting its work to the state system, and Henry W. Jordan, chairman, says it may be a year or two before the commission will be in a position to set up a uniform standard procedure for helping cities and towns on using Powell Act funds for streets off the state highway system.

The league's attack on the policy came after a conference between league officials and Jordan. The league pointed out that there are occasions when small towns without road building machinery could spend their Powell Act money most efficiently by arrangements with the highway commission. Jordan said, however, that the commission has all it can do to attend to its regular work on the state system.

In protesting the highway commission's ruling, the League of Municipalities sent a bulletin to all of its members stating that small towns do not have their own street building organizations and equipment and at some times will get such small funds from the Powell Act allocation that they may have to wait for several years accumulation before they can use the money through arrangements with private contractors.

Commissioner Jordan says that the commission is in the midst of the biggest road-building program in the state's history and that contractors now are working on 345 road projects, including grading, paving and bridge jobs. Ninety-three other projects have been let to contract, he said, but work has not been started yet. Several of these are bridge jobs on which delivery of steel has been slowed. In addition, he said, the commission is engaged in much maintenance and stabilization work.

• **Parking meters**—Chicago is following New York in the installation of parking meters. The first of 15,000 of them will be placed in three of its largest neighborhood shopping centers. Milwaukee, Wis., with almost 1,300 meters, has collected $190,531 from them since December, 1949.

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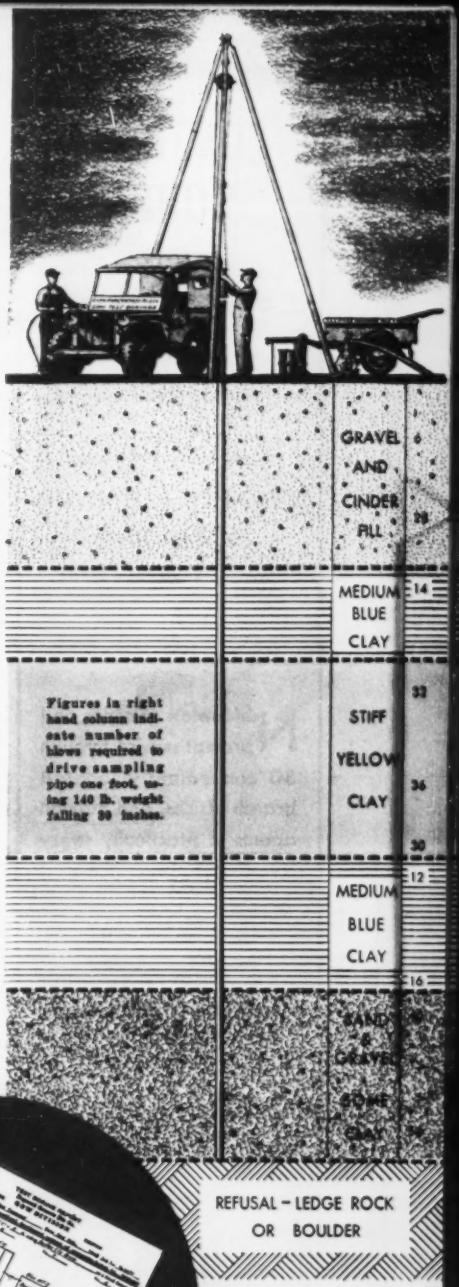

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FOREIGN

THE COMPLETED BRIDGE—73 days before the date set, this bridge across the Balsas River to Coyuca, Guerrero State, was completed March 25, 1951.

Business and government cooperate in building a Mexican bridge

Business and government have teamed up to do a job on Mexican roads. They work together with an enthusiasm that reminds U. S. highway people of the early days of the good roads movement in this country.

Their teamwork pays off. Just recently they opened up another region—heretofore almost inaccessible—by throwing a bridge across the Balsas River at Coyuca, capital of the Pacific Coast state of Guerrero, 110 airline miles south of Mexico City.

To Mexico, the bridge means much more than a safe and easy way to cross a difficult stream. It stands out as a symbol—the first bridge to be designed and partly paid for by the National Committee for Local Rural Roads.

Industry and government got together two years ago to produce the funds with which the committee does its work. In March 1949 the Mexican assembly plants of the automotive manufacturers entered into an agreement with the government by which each would supply half of the committee's funds. The auto industry agreed to pay 10% more in taxes, the money to be matched by the government, with the whole sum to go into rural—or so-called auxiliary—roads.

Purpose of the deal was to dig up cash for secondary highways. The national budget could not be stretched to cover these roads. Credit for the industry-government agreement goes to the Mexican Highway Association, an affiliate of the International Road Federation, headquartered in Washington, D. C. The Mexican good roads association sponsored the agreement and put it across.

In its first year, the National Rural Roads Committee had $1,150,000 to spend. The committee's charter allows it to contribute no more than one-third to the cost of a local improvement, the rest to come from the state governments and private individuals in the area to be benefited. For the Coyuca bridge, however, the project was so important that the Committee and the Communications Ministry made contributions of slightly more than $48,000 each to the $208,000 total cost. Besides the bridge itself, the project called for special approaches and for initiation of city plans both for Coyuca (pop. 2,000) and for Ciudad Altamirano, 4 miles northeast (pop. 4,000).

Local businessmen and the State of Guerrero contributed more than $23,000 to the cost. A bank loan—to be paid off from bridge tolls—supplied the rest of the money, less than $90,000.

• **Noteworthy structure**—Aside from its business-government financing, the bridge is a noteworthy structure in its own right. Vicente Guerrero y Gama, the consulting engineer employed by the Rural Roads Committee, produced a pleasing, economical design of which any bridge builder might be proud. The 773-ft crossing is bridged by nine 86-ft spans of twin reinforced-concrete continuous girders on stone piers. The two girders support the concrete roadway and cantilever sidewalks.

• **Welded reinforcing rods**—José Rivera, executive secretary of the Rural Roads Committee—and also director general of the Mexican Highway Association—points to other features of the bridge. Steel reinforcing rods were welded—instead of merely lapped—over the intermediate piers of each continuous bridge section, thus saving

(Continued on page 61)

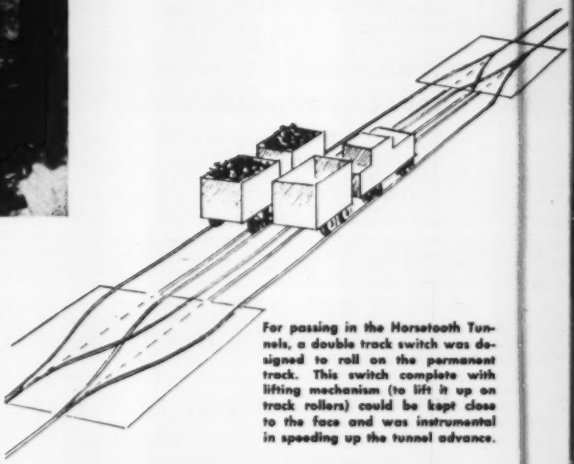
CASE HISTORY OF A SUCCESSFUL TUNNEL JOB

FROM THE EIMCO FILE T181

HORSETOOTH FEEDER TUNNEL

Specifications

Tunnel size 12' x 12'. Total length (4 tunnels) approximately 15,000 ft. Longest tunnel 9500 ft. Best daily advance 72'. Average depth of round 7½ ft. Average advance per shift 14'9". Average loading time 40 minutes. Loading machine—Eimco 40H.



For passing in the Horsetooth Tunnels, a double track switch was designed to roll on the permanent track. This switch complete with lifting mechanism (to lift it up on track rollers) could be kept close to the face and was instrumental in speeding up the tunnel advance.

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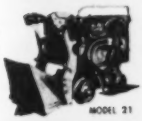

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Foreign . . .

10% in weight. Also, the builders used high-early-strength cement exclusively to cut construction time.

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To test-load the structure, the engineers used water instead of trucks or other vehicles. They built low brick walls around the deck slab of the spans being tested and filled these brick-wall reservoirs with water pumped from the river. Under design loading, the spans deflected 4 mm instead of the 6 calculated, and they recovered completely when the load was released.

A Canadian sanitarian helps restore Seoul water

A British Columbia sanitation expert, R. Bowering, of Victoria, is superintending restoration of waterworks of Seoul, in Korea, on loan from the province.

Bowering, now public health engineer for the United Nations Civil Assistance Command team in Seoul City and Seoul province, reports: "The city's five water plants, all damaged, compare favorably in quality with any in Europe or North America.

"The better class homes have water piped in; for the rest there is a system of street hydrants. Lack of money, trained personnel and essential parts is really all that is keeping us from getting the system working again.

"Meanwhile, the city's 8,000 wells supply the population with water.

"Koreans are more susceptible to reason, once things are explained to them, than our people. Take the taste of chlorination—once the reason is explained to them, they accept it without a murmur."

A native of Winnipeg, where he was graduated from University of Manitoba in engineering, and a public health postgraduate of University of Toronto, Bowering has been director of sanitation in British Columbia since 1940.

Foreign Briefs

• **Philippine reconstruction**—Reconstruction is the order of the day in the Philippines. Manila, one of the hardest hit of all cities in the world during World War II, is at work repairing damages as are all cities in the Islands. Bomb damage, enemy action, and the havoc caused by occupation troops

(*Continued on page 62*)

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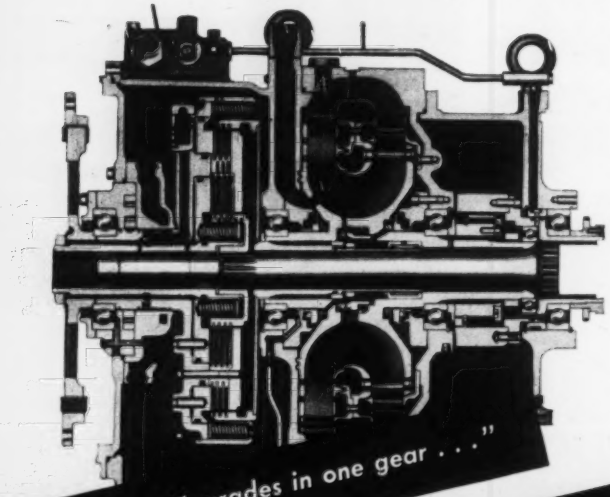

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That is the first paragraph from a just-published four-page bulletin on the *new* Twin Disc Model DF Three-Stage Hydraulic Torque Converter.

You'll want the complete story because never before have so extensive tests been reported on three-stage hydraulic torque converters with an *in-built* braking feature which no other torque converter can claim. Write today, and be sure to ask specifically for Bulletin No. 162. It may show you how to save thousands of dollars in truck operation.

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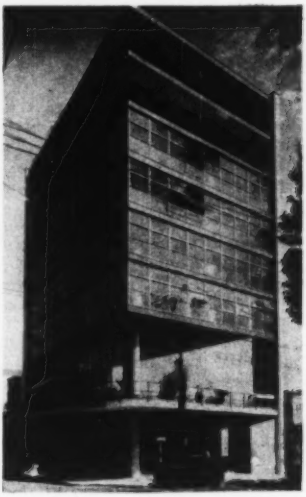
Foreign . . .

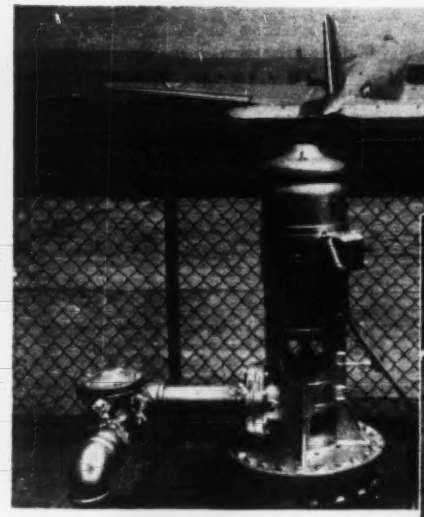
took a heavy toll of public and private structures. The development program has as its aim the reconstruction of homes and governmental buildings.

• **New hotel for Bogota**—After 136 days of work, the 18-floor hotel Tequendama in Bogota, Colombia, built by the Bogota engineering firm Cuellar, Serrano, Gomez y Cia Ltda. is under roof. The structure rests on foundations of concrete piles with metallic casings of the Raymond step taper type. There is a total of 668 piles driven by steam hammers and containing 738 cubic meters of concrete. This job was done by 345 workmen in 97 days. The work on the foundations began on Oct. 16, 1950, in reinforced concrete and was done in three stages of 41, 44 and 29 hours of continuous work, respectively. During these 114 hours a total of 1,622 cubic meters of concrete were poured.

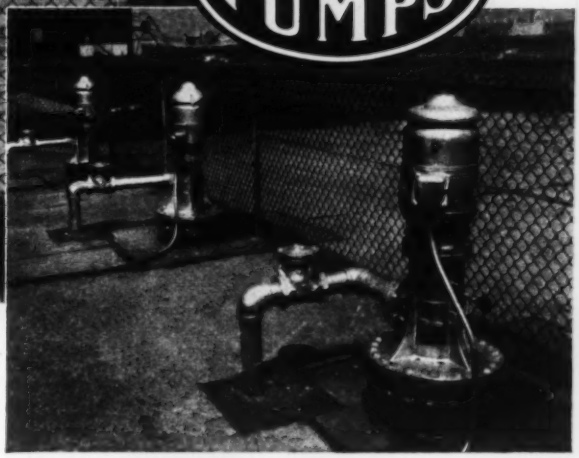
(*Continued on page 64*)



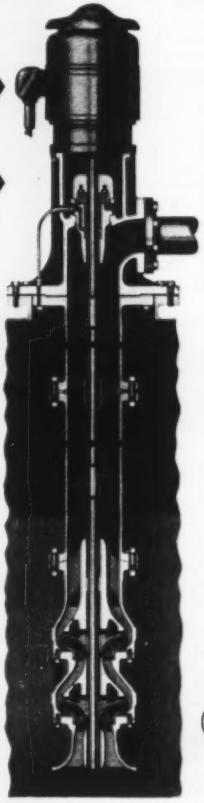
ARCHITECTS PLAN OWN BUILDING—Architects' headquarters in Sao Paulo, Brazil, is this recently opened building at Rua Bento Freitas 306. The 9-floor structure offers approximately 25,300 sq ft of covered space and houses the offices and social center of the Sao Paulo branch of the Brazilian Institute of Architects (Institute de Arquitetos do Brasil, Departamento de Sao Paulo), a restaurant, a permanent museum of materials of construction, and five floors of architects' offices. Design was by collaboration of member architects and construction was supervised by the organization itself. The facade of Belgian plate glass, set in Brazilian steel casements, is cut by transverse bands of glass mosaic.



PEERLESS PUMPS



A COMPACT, RUGGED AND EFFICIENT PUMP FOR AIRPORT AND SHIPBOARD USE


EXPLOSION PROOF HOLLOWSHAFT MOTOR Underwriters' Approved Construction
SPECIALLY IMPREGNATED PACKING Port relieves pressure and drains seepage to sump
AIRFIELD DISCHARGE BASE (Shipboard type uses flanged deckplate)
BEARINGS LUBRICATED BY LIQUID PUMPED
NO PRIMING PROBLEMS
FLANGED TYPE CONSTRUCTION FOR UTMOST RIGIDITY
ENCLOSED IMPELLERS ASSURE MAXIMUM EFFICIENCY

PEERLESS Direct Refueling and Transfer Pump for Aviation Gasoline

This approved modification of the famous Peerless close-coupled deep well turbine pump has complete acceptance amongst government and military officials and engineers for transferring and pumping of petroleum products at airports and airfields. Its operation is characterized by unfailing dependability and exceptionally long service life.

Write for Peerless Bulletin No. B-2522 and sample specifications. This detailed and descriptive information will save you time and money in planning approved type gasoline and fuel oil pumping installations.

CHARACTERISTICS AT A GLANCE:

HEADS:	from 20 to 300 feet.
CAPACITY:	30 to 1500 gpm.
HP RANGE:	2 to 75 hp.
DRIVES:	As required; standard, vertical, electric hollowshaft explosion-proof motor; right angle gear drive for use with stationary engines.
LUBRICATION:	Open line shaft construction; non-metallic bearings, lubricated by liquid being pumped. No Priming Problems.

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FOOD MACHINERY AND CHEMICAL CORPORATION
Address inquiries to Factories at:
Los Angeles 31, California and Indianapolis 8, Indiana
Offices: New York, Chicago, St. Louis, Atlanta; Dallas, Plainview and Lubbock, Texas; Fresno; Los Angeles; Phoenix; Albuquerque, New Mexico.

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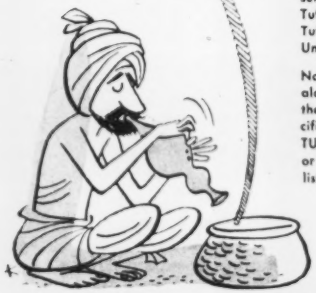
Magic Word for Moving Mountains

Making mountains disappear is no trick when your earth moving machinery is equipped with super-strong, super-flexible Tuffy Draglines or Tuffy Scraper Rope. Many more yards of material, many more hours of service are built into the special construction of these Tuffy special purpose ropes—and into Tuffy Slings, Tuffy Chokers and the other members of the famous Union Wire Tuffy Family.

Nor is there any trick to ordering Tuffy—the name alone plus the type, length and diameter needed is all that's necessary. No more complicated wire rope specifications to bother with—just use the magic word TUFFY for the ultimate low cost in wire rope. Write or say it to your Union Wire Rope Distributor (see listing in phone book yellow section) or write us.



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Specialists in Wire Rope, Braided Wire Fabric

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Dry Sample Borings
Grout Holes and Pressure Grouting
Foundation Testing for Bridges, Dams and other Heavy Structures

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Manufacturers of Diamond and Shot Core Drills, Accessories & Equipment

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Saves you time, trouble and money—just as it has thousands of satisfied users across the country. The result of many years' practical experience specializing in surface treating asphalt pavements—SUPER SEAL makes blacktop stay smooth, even, trouble-free, permanent, gives blacktop a future!

- An original—made with the most modern equipment . . . for a specific purpose . . . to do the job right . . . to satisfy you and delight your customers.
- A bituminous emulsion, completely irreversible, a closed-ring hydrocarbon, extremely workable, fully impervious to petroleum solvents, acids, etc.
- Nothing but praises in thousands of drums sold!

Send for details and special introductory offer

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Seal coating Pioneers—Specialists—Distributors
2137 SO. PARK AVE., BUFFALO 20, N. Y.
Also dri away colors, tools, accessories

SUPER SEAL
KEEPS BLACKTOP RIGHT

Foreign . . .

New road network in northern Mexico

Under the direction of the national committee on rural roads, a group of business men, primarily interested in automotive transport, a new network of such roads in the Torreon area of northern Mexico has been placed under construction and will be finished next year.

Consisting of 155 miles of paved and gravel roads that will link 27 small towns in a fertile agricultural area, the network will cost about $1,400,000, the expense to be shared equally by the national and state governments and the rural roads committee.

Torreon is connected by trunk highways to the rest of Mexico—east to Monterrey and southwest to Durango.

• **More power for France**—The first of six vertical, adjustable blade-propeller turbines has been installed at the Donzere-Mondragon hydroelectric development on the Rhone–France's equivalent of the TVA. Each of the turbines will feed a 50,000 kilowatt generator, adding a total of 2,000,000,000 kilowatt hours to France's annual electric power output. All six are scheduled to be in operation before the end of 1952.

• **Old bridge for scrap**—A steel railway bridge at Port Nelson, Man., on the shores of Hudson Bay has been abandoned and unused for 34 years. Now the federal government has sold it to Hercules Sales, Ltd. of Toronto, which hopes to sell it for scrap metal. The bridge is two-thirds of a mile long, connecting the mainland with an artificial island. It cost about $400,000. It would cost $1,000,000 to rebuild it. It was sold for a fraction of the cost. When the Hudson Bay Railway was being built it was decided to save 50 miles of line by switching the terminus from Churchill to Port Nelson. Construction difficulties were encountered at the new terminus because of shallow water which necessitated the building of an artificial island. War brought the project to a halt. Later it was found that the choice of a site had been a mistake and it was recommended that the terminus revert to Churchill with its storm-immune harbor and deep water. All work was abandoned at Nelson. Rails were ripped up and the half-built harbor facilities and bridge left to rust.

Euclid Scrapers

Make the dirt fly!

Owners in every part of the country report outstanding performance and production with the new Euclid Scraper. It has proved its efficiency and dependability on a wide range of work—construction of roads, airports, levees and in open pit mining.

These features assure top scraper performance . . . struck capacity 15.5 cu. yds., 20 cu. yds. heaped . . . 10 speed transmission . . . 275 h.p. engine . . . top speed with full payload 28.2 m.p.h. . . . high lift apron and positive roll-out ejector dump loads fast and clean . . . four wheel Euclid tractor provides easy, positive steering and has ample power, traction and flotation for fast loading and travel on steep grades and soft fills.

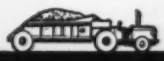
Call your Euclid Distributor or write direct for information on this Euclid Scraper . . . the easiest handling and most efficient loading, hauling and spreading scraper for your work.

The EUCLID ROAD MACHINERY Co.
CLEVELAND 17, OHIO

MORE LOADS PER HOUR—
MORE PROFIT PER LOAD

CABLE ADDRESS: YUKLID—CODE: BENTLEY

EUCLID



Cut 8 gauge sheet steel up to 5 feet per minute

with Stanley No. U208 Unishears

These husky power shears can do most of your sheet metal cutting —right on the job. They're faster and easier to use than hand snips, and they save moving large sheets of metal to stationary machines.

U208 Unishears leave a smooth, finished edge right along the cutting line—save filing, de-burring, and further trimming. Self-feeding principle advances work through blades — all operator does is guide. The U208 can cut along either straight or curved lines. Duplex handle permits convenient gripping. Cable is protected by flexible metal sheath. Available for operation on A.C. or D.C. in any standard voltage. Furnished complete with yoke, clearance gauges, wrench, and lubricant.

Ask to see the U208 at your industrial distributor's. For descriptive literature, write Stanley Electric Tools, 438 Myrtle Street, New Britain, Conn.

HARDWARE • TOOLS • ELECTRIC TOOLS
STEEL STRAPPING • STEEL

STANLEY

Reg. U. S. Pat. Off.

Boston street lighting rate advance approved

Forty Massachusetts cities and towns, including Boston, are to meet a $197,000 rise in annual street lighting costs beginning Jan. 1, 1952. The Boston Edison Co., which serves these municipalities, has won an appeal to the state commission based on cost advances since 1918, the last date of any important highway lighting price adjustment on the system. Cost of street lamps has risen over 200 percent, linemen's wages over 300 percent, underground cable about 230 percent, and municipal taxes have trebled.

A significant comment by the commission arose in connection with the claim that an increased tariff would interfere with Boston's plans for modernizing its street lighting. The commission said in part: "As between our city and the company, we believe our statutory duty requires us to permit the utility to increase its rates wherever, as here, we are convinced that its costs and financial condition demand such changes. We are living in an era of sharply increased prices. A municipality cannot escape these conditions any more than can any citizen or any other rate payer. If increased prices compel a modification of modernization, it is no more than every one of us is forced to do in his own affairs."

Big city tries to solve fringe area problems

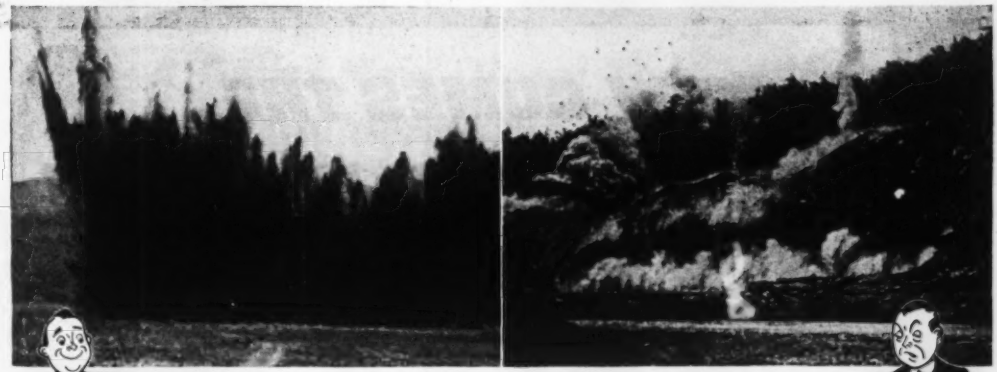
A long-range compulsory annexation program that in its first phase would add 9½ square miles and 18,000 persons to the city of Indianapolis has been recommended by the City Plan Commission to remedy the problems of the city's fringe areas.

In many of those areas, population is as dense as that within the city, but essential services such as sanitary sewers are lacking. The compulsory phase of the program is possible through an Indiana law which permits city officials to petition city council to annex certain areas. If the city can prove that annexation would be beneficial to the residents involved, the annexation may proceed.

The plan commission reported that residents of Perry Township pay $26 a year more for essential services than they would in the city on comparable property valuations.

During the 1930-1950 period, the city acquired only 1.1 square miles additional area. In the last ten years, the city's population increased by 10 per cent, while the county population outside the city increased 74 per cent.

"One man's meat is another man's poison..."



"I'm blasting a ditch. I want to throw that muck UP and OUT. The farther it flies the better. This is a good blast for me, because it's doing what I want—it's making ditch."

"I'm blasting for rock. I don't want to throw it up in the air. I want it broken and dropped for my shovels. Here much of the power of the explosives is going to waste. A mighty poor blast for me!"

The blast that is just right for one operator may be all wrong for another. A ditching shot like the one at left above is meat for the farmer or agricultural engineer. But such throw is strictly poison for blasting work in quarries, strippings and most construction jobs.

The ROCKMASTER Blasting System gives better control over explosives force—enabling you to strike the proper balance between throw and breakage—to suit *your* job.

Your Atlas representative will be glad to help you use the proper combination of the 16 available ROCKMASTER split-second delay detonators, plus explosives and loading methods especially suited to your requirements.

Write today for the ROCKMASTER "16" booklet, showing typical loading diagrams for several types of quarrying, stripping and construction blasting operations. It's yours for the asking.

ROCKMASTER "16" TIMINGS

Rockmaster No.	Avg. Time of Each Delay from Zero (milli-seconds)
0 (zero)	0 (inst.)
1	8
2	25
3	50
4	75
5	100
6	125
7	150
8	175
9	200
10	250
11	300
12	350
13	400
14	450
15	500
16	550

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NOW COMES THE "MILLION MILER"!

GM's New "MILLION-MILER" Engine For America's No. 1 Diesel

New High Governed Speed: 2100 R.P.M.
Six-Cylinder "6-71" Model: 225 H.P.
Four-Cylinder "4-71" Model: 150 H.P.

A Great New Diesel That Will Pay You Dividends for Years to Come

Now the dream of every hauler comes true—a superb truck, *with an engine built to pull a million miles and more!*

For here is General Motors' "Million-Miler" Diesel—combining the famous two-cycle efficiency and lighter-weight design that have made GMC's first in heavy-duty hauling—*with new developments never before achieved in Diesel engineering:*

Automatic Fuel Modulation

First, the "Million-Miler" has a built-in brain—a revolutionary GM-engineered device called the Fuel Modulator. This absolute feed control prevents abuse, eliminates inefficiency at low engine speeds—automatically feeds this new Diesel the right measure of fuel and air, *regardless of throttle pressure.* As a result, maximum efficiency is maintained in the low engine speed range—watched over by a unit ever proportioning the perfect mix.

The result is a master Diesel that saves fuel, prevents lugging and sludging at low speeds. But that's only part of the story.

Freer Breathing at High Speeds

For next, GM engineers worked out a new timing cycle for exhaust valves in this engine—keeping the ports open for prolonged scavenging of burned gases from the cylinders.

The result is a clean-burning Diesel that takes great gulps of rich, fresh air even at the topmost speeds—insuring complete combustion, maximum power, more "go" from every ounce of fuel you use.

Here is an engine that is never fed more than it needs—and makes the most of what it gets! A clean, carbon-free Diesel that delivers 12½% more horsepower than its famous GMC forerunners of equal size and weight!

We earnestly urge you to get the facts on these new four- and six-cylinder models at your GMC dealers'. These stalwart GMC's come in a wide variety of trucks, tractors and six-wheelers—to handle any loads from 24,000 GVW up. *And every one has the sensational new GM Diesel engine—every one is powered to go a million miles and more!*

HERE'S WHAT "MILLION-MILE" ENGINEERING MEANS!

★ **AUTOMATIC FUEL MODULATION**—master-mixes air and fuel—makes every ounce count. Prevents lugging and sludging at low engine speeds.

★ **FREER-BREATHING, CLEAN-BURNING**—New 170° camshaft keeps exhaust valve ports open longer, completely scavenges chambers for maximum combustion, *refreshed power!*

★ **SUPER-STRONG CRANKSHAFT SERVICE**—Tocco-Hardened, specially processed to be unaffected by stress peaks of toughest "load-toting" range.

★ **RENEWABLE CYLINDER LINER INSERTS**—provide a solid seat for cylinder liners. Won't drive down. Add extra rigidity and life.

★ **HEAVIER-PROPORTIONED CYLINDER HEAD**—Heavier ribs and struts minimize deflections. New stud bosses with deeper grip.

★ **METAL-TO-METAL HEAD AND BLOCK**—with revolutionary individual aperture sealings. Conventional gasket eliminated.

★ **NEW INJECTOR ROCKER ARMS**—New Pallet-type design improves contact, gives longer life.

★ **CHROME-PLATED PISTON RINGS**—for increased ring and cylinder life.

★ **IMPROVED EXHAUST VALVE DESIGN**—New 30° seat-angle, with long-time Stellite facing.

★ **NEW OIL CONTROL RINGS**—with three times longer life.

And! Major parts interchangeability between four- and six-cylinder models greatly reduces parts inventory for operators of mixed GMC fleets!

GMC

GASOLINE & DIESEL TRUCKS

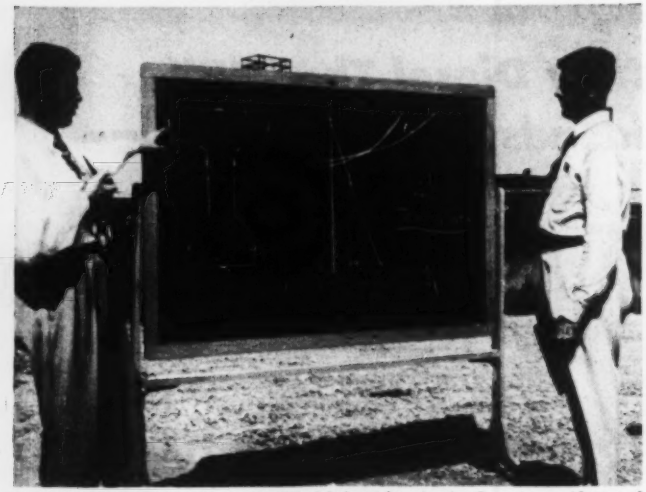
½ TO 20 TONS

GM GENERAL MOTORS

Your key to greater hauling profits

GMC Truck & Coach Division of General Motors

MEN AND JOBS



STRESS DISTRIBUTION—A. T. Waidelich, right, Austin Co. vice-president and manager of research division, and Arthur R. Anderson, consulting engineer, study stress distribution of various loading stages across a cross-section of a 40-ft prestressed concrete beam that was tested to destruction by the Austin Co. (ENR Aug. 23, page 24) Data were obtained with strain gages.

New Appointments

Highway departments

W. J. Niemi has been promoted from chief of operations to chief engineer of the Alaska Road Commission, at Juneau, but will handle the duties of both offices until the end of the construction season, when a new chief of operations will be named. He succeeds **A. F. Ghiglione,** appointed commissioner.

James P. Tuthill has been appointed engineer in charge of the Cook County district of the Illinois Division of Highways, succeeding **Charles H. Apple.**

State, city and county

Oliver O. Manning has been named city manager at Dunn, N. C., succeeding **Thomas Hobbs,** called to active duty in the Navy.

Julius Schmeichel, formerly an engineer with the U. S. Army Corps of Engineers, has been named superintendent of public works for Mason, Mich.

William J. Byrne, Dubuque, Iowa, has been named Allamakee County engineer at Waukon.

William W. Adkins, superintendent of the water and sewer department at Asheboro, N. C., has been named superintendent of the similar department at Burlington, N. C., succeeding **Ed Thomas,** who has held the post for 37 years, and who has been named special advisor to the department.

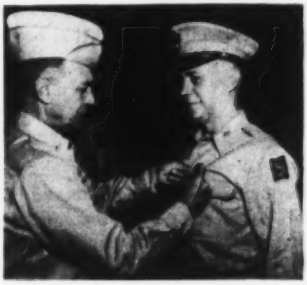
Walter E. Hanson is chief bridge engineer, Illinois highways.

Willis O. Klotzbach is the new bridge designer for Mercer County, N. J., succeeding **Harry A. Kersey,** resigned. Klotzbach is a graduate of Lafayette College, where he received a bachelor of science degree in civil engineering.

Joseph F. Kunesh, former Honolulu, T. H., city-county engineer, is leaving as dean of the college of applied science at the University of Hawaii to go with the water resources division of the National Production Administration in Washington, D. C. to begin his duties at once.

Ford Richardson, Jr., has been transferred from Norfolk district, Corps of Engineers, to Construction Div., Directorate of Installations, H.Q. U. S. Air Force, Washington, D. C.

(Continued on page 73)



DECORATED—Col. Harold A. Stewart, engineer, Headquarters and Service Command, General Headquarters, Far East Command, receives the Legion of Merit for outstanding engineering service in support of the Korean campaign. Brig. Gen. E. W. Piburn, left, presents the decoration.

CERTIFICATE OF APPRECIATION—Gerald G. Greulich, Pittsburgh consulting engineer, industrialist and civic leader, was presented with an emblem and Certificate of Appreciation "for outstanding patriotic service to the Department of the Army during World War II." The presentations were made by Brig. Gen. Gordon E. Textor, Assistant Chief of Engineers for Military Operations, in the presence of many high ranking officers and friends. Greulich's principal contribution was that he designed and made available the pierced steel landing mat which permitted the Corps of Engineers to provide facilities quickly for Air Force fliers.

RECENT CHANGES—In the organizational structure of the Corps of Engineers Waterways Experiment Station at Vicksburg, Miss., include the appointment of Joseph B. Tiffany as assistant director. His former assignment was that of special assistant to the director, with additional duty as chief of the Technical Services Division. Mr. Tiffany has been connected with the Corps of Engineers for 22 years, the last 18 at the Experiment Station.

Bolting of structural joints cuts construction costs!

If you are interested in substantial savings in erecting your next building, follow the example of one of America's largest housing projects.

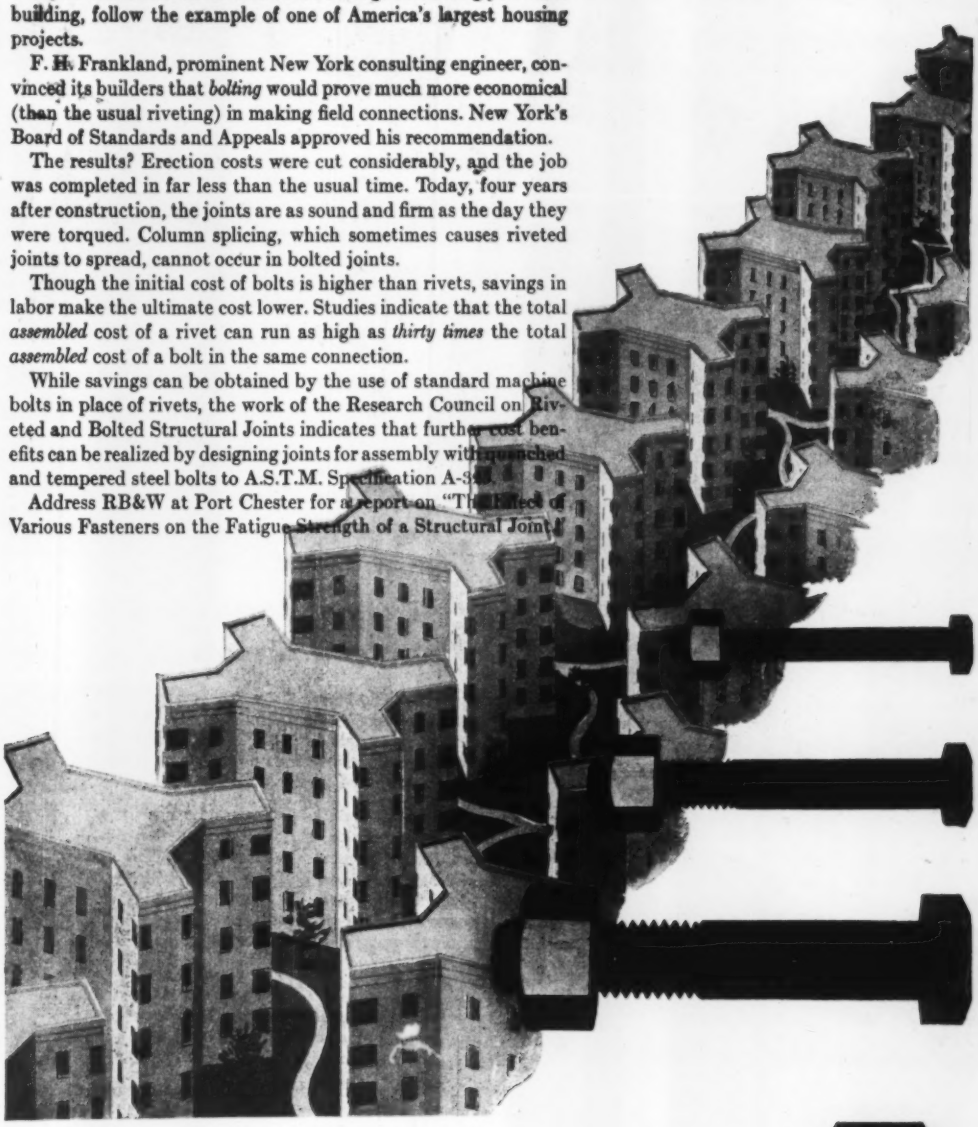
F. H. Frankland, prominent New York consulting engineer, convinced its builders that *bolting* would prove much more economical (than the usual riveting) in making field connections. New York's Board of Standards and Appeals approved his recommendation.

The results? Erection costs were cut considerably, and the job was completed in far less than the usual time. Today, four years after construction, the joints are as sound and firm as the day they were torqued. Column splicing, which sometimes causes riveted joints to spread, cannot occur in bolted joints.

Though the initial cost of bolts is higher than rivets, savings in labor make the ultimate cost lower. Studies indicate that the total *assembled* cost of a rivet can run as high as *thirty times* the total *assembled* cost of a bolt in the same connection.

While savings can be obtained by the use of standard machine bolts in place of rivets, the work of the Research Council on Riveted and Bolted Structural Joints indicates that further cost benefits can be realized by designing joints for assembly with quenched and tempered steel bolts to A.S.T.M. Specification A-325.

Address RB&W at Port Chester for a report on "The Effect of Various Fasteners on the Fatigue Strength of a Structural Joint."



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THE COMPLETE QUALITY LINE

Plants at: Port Chester, N. Y., Coraopolis, Pa., Rock Falls, Ill., Los Angeles, Calif. Additional sales offices at: Philadelphia, Detroit, Chicago, Dallas, Oakland. Sales agents at: Portland, Seattle.

106 YEARS MAKING STRONG THE THINGS THAT MAKE AMERICA STRONG

RUTHERFORDTON—Main St. Built in 1919. Photos taken in 1924 and 1951

WINSTON-SALEM—Liberty St. Built in 1918. Photos taken in 1922 and 1951

ASHEVILLE—Hilliard St. Built in 1924. Photos taken in 1926 and 1951

Here today—*and still here tomorrow*

that's the story of North Carolina's Concrete Streets

The motto of the "Old North State," *Esse quam videri*—"To be, not to seem"—might well apply to the state's old concrete pavements. Many of North Carolina's concrete pavements, like those shown here, have rendered ***low-annual-cost*** service for 25-30 years and more.

North Carolina is one more state that can point with pride to the long service its concrete pavements have delivered. Such economical service is typical from coast to coast because concrete pavements (1) usually cost less to build than other pavements of equal load-carrying capacity, (2) require less maintenance and (3) last far longer. Result: ***low-annual-cost*** pavements that are "*here today—and still here tomorrow.*"

Concrete pavements also are safer. Wet or dry, concrete's gritty texture has uniformly high skid resistance. Nighttime driving accidents are reduced because its high light reflectance provides unexcelled visibility.

For more information send for your free copy of the booklet "*Concrete for Every Traffic Need.*" Distributed only in United States and Canada.

PORTLAND CEMENT ASSOCIATION

Dept. A9b-17, 33 W. Grand Avenue, Chicago 10, Illinois

A national organization to improve and extend the uses of portland cement and concrete . . . through scientific research and engineering field work

Men and Jobs . . .

Corps of Engineers

Victor S. Fago has been transferred from hydraulic engineer with the International Boundary and Water Commission (San Diego section) to chief of engineering branch, for the Rhine Military Post in Germany.

Government agencies

Edward R. Thornton has been appointed a member of the New England Interstate Water Pollution Control Commission by Gov. Sherman Adams of New Hampshire. Also named were **Harry Manson,** chairman of the state water pollution board: **W. A. Healy, J. M. Allem** and **W. G. White** of the state anti-pollution commission.

Col. Wm. E. Potter has left his position as Asst. chief of Engineers for Special Projects, Office of the Chief of Engineers, to report as a student at the National War College, Washington, D. C. Consulting engineers.

Vance E. Lischer, with Horner & Shifrin, St. Louis, Mo., has left to fill a 4-month job in Karachi, Pakistan.

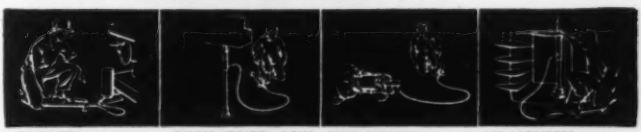
C. W. Riva Co. has removed to 511 Westminster St., Providence, R. I.

(Continued on page 74)

AUTOMATIC PUMPING PLANT — George W. Trauger, resident engineer and superintendent for the Lindsay-Strathmore Irrigation District in California, points his cane to the meter dial of the district's new automatically-operated Wutchumna pumping plant. Trauger, long active in California AWWA affairs, has served the district for 36 years and has watched that part of the rich San Joaquin Valley develop and prosper.

Man-Alive! this Hydraulic Jack DOES EVERYTHING but walk and talk!

It's a "Porto-Power" . . . not an *ordinary* jack! And "Porto-Power" wipes out scores of traditional construction and maintenance methods which, by comparison, are downright money-wasting! Every-day savings are dramatic — so you'll want to get the *full facts* and order "Porto-Power" *immediately!* See leading supply houses or write Blackhawk today.



TOE-LIFT—Raise from a 1½" low. Replace crowbar methods.

PUSH OVER ANY SPAN — Eliminate dangerous blocking up.

PULL PULLEYS, gears, wheels. No hammering or prying.

STRAIGHTEN parts. Apply force exactly where you want it!

BEND PIPE and conduit the easy, profitable, fast way.

BEND RAIL. Straighten shafts. Insert or remove bushings, pins, etc.

FREE blueprints show how to build low-cost press for Porto-Power.

CLAMP parts for welding or bolting—short or long spans.

Every contractor needs this S-79 KIT

This is the basic "Porto-Power" assortment for *every* contractor. Its 20-ton remotely-controlled hydraulic jack and 12 attachments pay for themselves on one or a few routine assignments. (You can get "Porto-Power" in 2, 4, 7, 10 and 50-ton sizes, too.)

Porto-Power®

(trade-mark registered) remotely-controlled hydraulic jacks are made only by

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FREE! Rush coupon or write for Porto-Power catalog.

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Send literature on "How *Porto-Power* speeds up construction and maintenance."

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No other Instrument gives you

SO MUCH PROTECTION!

NOTICE the leveling screws on the instrument leveling head above. See how they are always totally enclosed — regardless of their position "in" or "out". This means all dust and dirt are sealed out — their precision sealed in.

This is just one of the many extra protective refinements, extra features that guarantee you extra-long life and super precision results with David White Instruments. There are other things too — the waterproof compass box, the overall weatherproof morocco finish—coated optics—hand-fitted, anti-friction, virgin hard, bell metal centers—plus the David White improved engraved plate levels with counter adjusting springs.

Yes, for instruments that guarantee you the extra in precision and long life you want — it's David White . . . makers of finest quality instruments for over 40 years. For detailed information about the complete David White line of Transits, Universal Level Transits, Levels, Theodolites and engineering supplies, write today for Catalog No. 1048.

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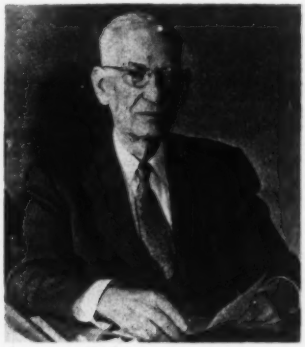
We offer the most expert Repair Service — on all makes of Instruments.

Men and Jobs . . .

Sanitary Engineer Director **W. E. Gilbertson,** executive officer of the Public Health Services Communicable Disease Center at Atlanta, Ga., has been designated chief of the Service's Div. of Civilian Health Requirements.



RETIRES—Shreve Clark, testing engineer, Virginia Highway Department, who started the testing division, has retired after 31 years of service.

Retirements

Chas. H. Apple, works director, Illinois highways, after 37 years.

Charles S. Urlin, railroad road builder and bridge builder of Hamilton, Ont., has retired after 30 years as an engineer with the Hamilton city engineer's department.

H. W. Whitsitt, the government engineer credited with designing the Travis Air Force Base in Fairfield, Calif., has retired at the age of 72. He was in government service as an engineer and architect for 19 years.

Harry R. Hall has retired as chief engineer of the Washington Suburban Sanitary Commission after 33 years continuous service with it. During that time the sanitary district area has grown from 95 to more than 200 sq. mi. and the population from 32,000 to more than 310,000, and assessable value from $20,000,000 to more than $435,000,000, with corresponding increase in sanitation and waterworks activities.

Resignations

Charles F. Wayland, Jr., commissioner and chief administrative officer of the Tennessee Department of Highways & Public Works, has resigned to return to his home in Knoxville, Tenn. He is succeeded by **C. W. Bond** who has been serving as director of the Department of Personnel of Tennessee.

Portland, Ore., contractor reports:

Chas. T. Parker, of Parker-Schram Co., says: "On this 36" pipe line using Dresser Couplings, a foreman, crane operator, oiler and six-man crew were able to average 15 lengths per day, complete except for coating. This in spite of almost incessant heavy rains. Where ditch was available without obstruction, we were able to complete about five lengths per hour. We know of no better method of connecting lengths of pipe in a water line."

A Dresser-Coupled steel line delivers water cheaper

The cheapest way to deliver water to the place where it turns into revenue is with a Dresser-Coupled steel line—the line that cuts *installation* costs, *leakage* losses and *maintenance* costs.

As in the case of this Portland water main, construction of a Dresser-Coupled line keeps going despite adverse weather conditions. Because a wrench is the only tool needed to make joints, costly weather delays are minimized or eliminated. And, in good weather, this type of construction sets a pace no other method can equal. The line starts paying its way sooner.

Leakage losses are cut because Dresser Couplings stay "flexible-tight" for the life of the line. Controlled gasket pressure is provided by controlled bolt tightness around the joint.

Maintenance costs are reduced also. Dresser Couplings harmlessly absorb underground stresses; and modern glass-smooth pipe linings, undamaged in joining because there's no heat, assure sustained high carrying capacity.

From all standpoints, a Dresser-Coupled steel line gives you the ultimate in performance and economy. See your Dresser Sales Engineer or write our Bradford Office for literature.

BE SURE you get the best line at the best price. Put steel pipe and Dresser Couplings in your specifications.

DRESSER

"FLEXIBLE-TIGHT"

COUPLINGS

Dresser Manufacturing Division, 50 Fisher Ave., Bradford, Pa. (One of the Dresser Industries). Warehouses: 1121 Rothwell St., Houston, Texas; 101 S. Bayshore Highway, South San Francisco, California. Sales Offices: New York, Philadelphia, Chicago, Houston, South San Francisco. In Canada: 629 Adelaide Street, W., Toronto, Ontario.

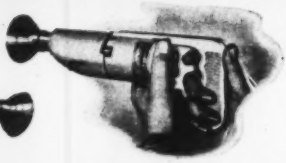
Announcing

REMINGTON

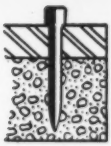
New cartridge-powered tool concrete or steel in one

It's fast and easy to operate The Remington Stud Driver

Simply hand-assemble stud and power cartridge, load as a unit in easy-to-open Remington Stud Driver, and close.



Then press loaded Stud Driver firmly against working surface, depress safety button, and pull trigger.



Explosive charge imbeds stud solidly. Open Stud Driver with a twist of the wrist, eject empty shell, load next stud. Whole job takes seconds!

"If It's Remington, It's Right!"

Remington

DUPONT

MODEL 450

STUD DRIVER

fastens steel or wood to *lightning-fast* operation

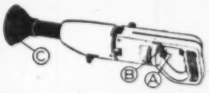
LOOK AT ALL THESE FEATURES

COMPACT AND PORTABLE. Weighs only 5½ pounds, ideal for scaffold, ladder and overhead work. Comfortable to use in any position, perfect for inaccessible places.

SPEED. One man can set up to 5 studs in a minute. Entire mechanism designed for speed, from loading to pulling the trigger to ejection of shell. Stud is set at whatever depth is required—up to 2¾ inches, depending on material.

ELIMINATES INVESTMENT IN OUTSIDE POWER. Operator has all the equipment needed right in his hand. Excellent for use in isolated areas.

TRIPLE SAFE. Remington Stud Driver has plainly visible red dot indicator (A) to show when it's cocked, safety (B) that must be depressed before and during squeezing of main trigger, and permanently attached safety shield (C) that must be compressed against work before the Stud Driver will operate. Trigger is well protected, cannot be tripped accidentally. Has only slight recoil and low noise level.



WIDE VARIETY OF STUDS are available for every fastening job—every stud trade-marked for the user's protection. Pull-out resistance as high as two tons in good concrete, depending on the stud used. Cartridges are available in 5 different power loads, covering all possible fastening requirements—any stud instantly assembled with any cartridge.

RUGGED. All working parts of the Stud Driver are made of heat-treated alloy steels, housing of strong, lightweight aluminum that carries no operating stress. Lining of safety shield is a solid block of tough, resilient Du Pont neoprene.

PRICE for Model 450 Remington Stud Driver—only $119.50—complete in rugged steel carrying case. Initial production and distribution may not keep pace with demand, but every effort will be made to fill orders as promptly as possible.

Sets fastening studs as fast as 5 per minute...needs no outside power source

Here's a tool that can truly revolutionize your construction fastening methods—speed jobs and cut costs. In a matter of seconds, the Remington Stud Driver firmly fastens steel or wood structural pieces and fittings to concrete or steel surfaces. It's as much as 100 times faster than methods now widely used. And this simple tool does the entire job... requires no outside power source or equipment. It's compact, portable, rugged... and safe.

Proved by exhaustive tests to be the finest fastening system ever devised, the Remington Stud Driver is made by Remington Arms Company, Inc., America's oldest and foremost gunmakers. To obtain detailed information on this time- and money-saving tool, and for the name of your nearest distributor, fill out and mail the coupon below.

Remington Arms Company, Inc.
Industrial Tool Division
934 Barnum Ave., Bridgeport 2, Conn.

I am interested in obtaining detailed information on the Remington Stud Driver Model 450.

*Name*_____

*Firm*_____

*Position*_____

*Address*_____

*City*_____ *State*_____

ALL THESE JOBS... AND MANY MORE!

1. Hanging steel sash and door bucks to concrete and brick.
2. Anchoring wood plates to concrete floors and ceilings for setting partitions.
3. Fastening wood furring strips to concrete for attachment of metal lath.
4. Anchoring suspended ceilings, hangers, sprinkler systems and lighting fixtures to concrete.
5. Attaching conduit and panel boxes to steel and masonry.
6. Anchoring light machinery to concrete pads.
7. Erection of signs, awnings and blinds on steel or masonry.
8. Hanging radiator housings to concrete or brick.
9. Fastening soil pipe hangers to concrete.
10. Fastening 2 x 4's to steel structurals.

Which method will you use to select the DRAINS?

• One way to select drains for a project is to spend days and weeks analyzing drawings, literature and other data —and you may still not be sure of your selection. The other way is to call Josam on the job, knowing that Josam has the widest range of plumbing drainage products in the world . . . and that Josam is specified and installed in more projects, than all other makes combined. In this way, you put proven experience on the job . . . you save time, you save guesswork and you know that the drains selected will be absolutely correct.

BRIDGE DRAIN
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37 other types

RAMP DRAIN
Series 0310-5-R
63 other types

SWIMMING POOL FITTING
Series 0710-B
78 other types

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City .....Zone.....State.....

EDUCATION, RESEARCH

Defense area housing research starts

The University of North Carolina and the University of Pennsylvania have started research in housing and community planning problems at two new defense production centers.

The University of North Carolina will study urban growth around the new plant of the Atomic Energy Commission on the Savannah River in South Carolina.

The University of Pennsylvania will study development around the United States Steel Company's works now going up at Morrisville, Pa.

Both projects are being sponsored by the Housing and Home Finance Agency. Findings will be used in the areas studied as an aid to giving defense workers better living conditions.

They will also provide information that can be used to assist the government in meeting similar situations arising with the rapid expansion of the defense program. Both projects will run for two years.

The Savannah River study will find out what happens in a lightly settled Southern agricultural community when more than 100,000 defense workers are drawn into the area in a short time.

Raymond M. Foley, administrator of the HHFA, says there is a basic difference between the new AEC plant and those built during World War II. In those cases, the government built and operated complete towns. At Savannah River, no permanent housing or community facilities are planned. The job is being left up to private enterprise.

One of the goals of the research will be to observe the progress of the community under private enterprise as it develops housing, schools, and other necessary facilities. First move will be to set up a field office in Aiken, S. C. and undertake a sample census.

The new U. S. Steel plant at Morrisville is being built across the Delaware River below Trenton, N. J.

Richard U. Ratcliff, research director for the HHFA, says:

"The Morrisville development will substitute steel for spinach as a major source of livelihood in the affected area. This whole district will be changed literally from the ground up. The industrial population will need housing, transportation, and community facilities to an extent not required by the current truck-farming populace."

Research program on small homes

The housing research committee at Purdue University, Lafayette, Ind., has listed 13 research projects which should result in better and cheaper homes. On several of these projects, university housing laboratories have made good progress.

Under a grant from the McPhearson Foundation of Chicago, the School of Civil Engineering is developing new methods and equipment for treating household wastes and sewage from individual homes. Prof. Don Bloodgood believes the new process will have many advantages over septic tanks.

The other research projects proposed include solar heat, radiant panel heating, determination of unit costs of construction, development of basic work and living areas in low-cost homes, timber roof frames, lightweight rigid floors, rigid wood frames, lightweight aggregate concrete, moisture condensation in walls with special reference to paint peeling, housing for the aged, housing and industrial performance and housing savings plans among low-income groups.

Purdue has invited several residential contractors, building supply dealers, and financial institutions to meet with the university staff to develop a cooperative program. Several builders have offered materials and labor to build specially designed houses incorporating research features suggested by the Purdue staff.

Evans tells some faults of engineering education

Prof. Weston S. Evans, head of the civil engineering department at the University of Maine, Orono, at a recent meeting of the Maine Section of the American Society of Civil Engineering spoke on "What is Wrong With Engineering Education?"

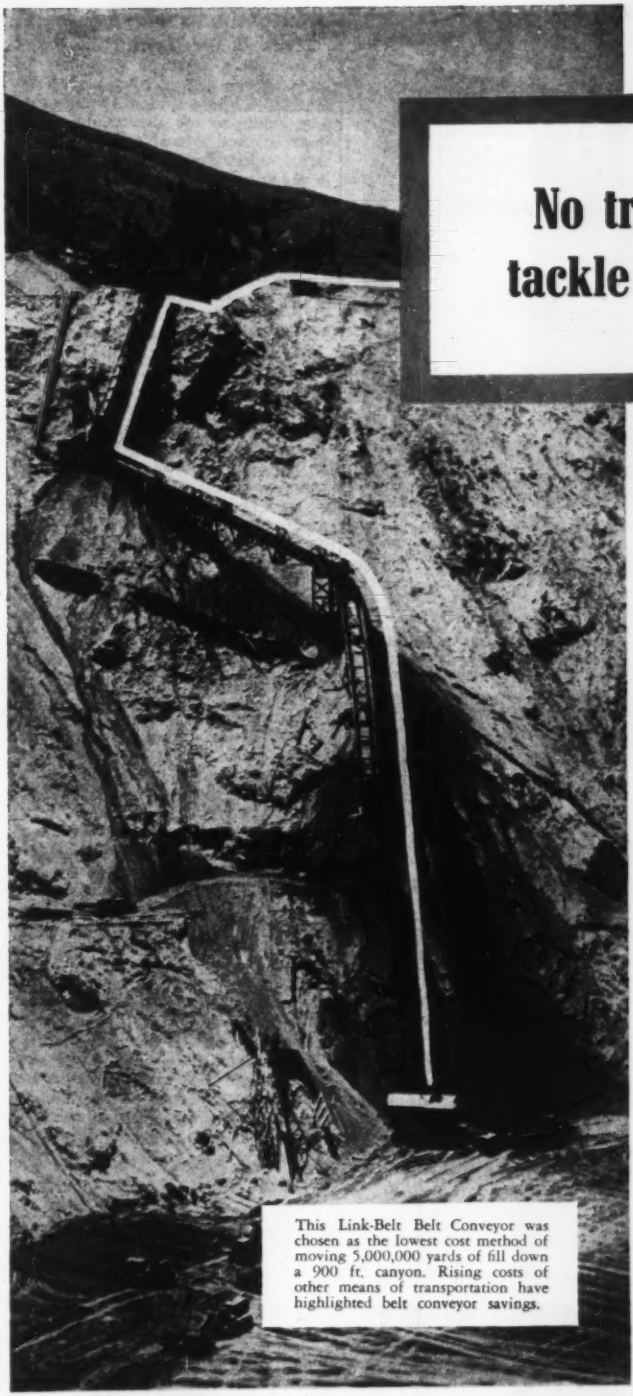
He listed the "ailments" as follows:

Our curricula or degree requirements lack flexibility.

The engineering profession demands so much knowledge that not enough time remains to acquire basic theory.

In carrying out what we might call "experience assignments," the student is not thrown upon his own resources to a sufficient extent.

(*Continued on page 80*)



This Link-Belt Belt Conveyor was chosen as the lowest cost method of moving 5,000,000 yards of fill down a 900 ft. canyon. Rising costs of other means of transportation have highlighted belt conveyor savings.

No truck would tackle this grade!

But millions of tons of material ride these "highways of tomorrow"—Belt Conveyors engineered and built by LINK-BELT

UP AND DOWN or through mountains, over rivers and gullies, belt conveyors are easily adapted to existing terrain.

Yes, for bulk material handling, belt conveyors provide unmatched initial economies. In many cases operating and maintenance costs are far lower than with other methods of transportation.

To get the best in belt conveyors, come to Link-Belt. Link-Belt makes all the various elements—all types and sizes of idlers, take-ups, pulleys, trippers, bearings and power transmission machinery. Backed by unmatched materials handling and power transmission experience, our specialists help you get the *right* equipment for your requirements.

The next time you're planning a construction project, check with Link-Belt as early as possible. You may find it makes a vital difference in your bid.

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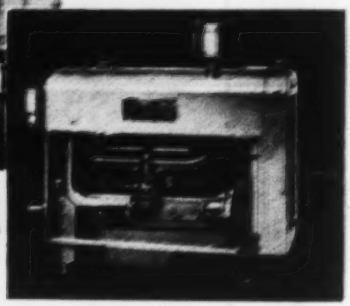
LINK-BELT COMPANY: Chicago 9, Indianapolis 6, Philadelphia 40, Atlanta, Houston 1, Minneapolis 5, San Francisco 24, Los Angeles 33, Seattle 4, Toronto 8, Springs (South Africa). Offices in principal cities.

SPEEDING IT UP —

BAISS Bucket Loader powered by WAUKESHA Model 6-BZII Power Unit keeps aggregate moving—stockpile to dump truck to job.

•

Model 6-BZII WAUKESHA Power Unit—six cylinders, 4-inch bore x 4½-inch stroke, 320 cu. in. piston displacement.



WAUKESHA POWER

● Making materials *move!* Loading, excavating, hoisting—the heavy duty jobs—this Waukesha 6-BZII power unit puts out a lot of power, smoothly and steadily, and doesn't take much fuel to do it. It's a sturdy but simple six of the L-head type—ready and reliable. Its deep cylinder block and crankcase is a single casting of Waukesha alloy iron . . . with 7-bearing cross walls and a substantial top deck to hold the structure in rigid alignment, cutting down vibration and wear. The Waukesha intake manifold is specially designed in combination with the controlled turbulence combustion chamber. Full pressure oiling and centrifugal pump cooling. Details in Bulletin 1269.

143

WAUKESHA MOTOR COMPANY, WAUKESHA, WIS., NEW YORK, TULSA, LOS ANGELES

WAUKESHA

Education, research . . .

Many students entering our freshman classes, although possessing a high degree of intelligence, have neither the proper frame of mind nor the ability to use the training they have received to enable them to pursue a college course successfully. This is unfair to all concerned.

Director E. U. Condon resigns from Bureau of Standards

Edward U. Condon, noted nuclear physicist, has resigned, effective Sept. 30, as director of the National Bureau of Standards, and his resignation has been accepted by President Truman. He has been director since November, 1945, and has been responsible for important contributions to the Department of Defense and the war emergency program. He is co-author of two of the basic textbooks on atomic physics.

Dr. Condon will become director of research and development for the Corning Glass Works, Corning, N. Y.

Brief news of education and research

• **Plenty of jobs**—Last June's seniors at the University of Tennessee have received several job offers apiece.

• **Research at Illinois**—Eighty-four percent of the senior engineers at the University of Illinois are qualified for research, according to a survey by the American Society for Engineering Education. The senior members of the department of civil engineering are devoting 21½ percent of their time to research compared with a national average of 6½ percent among departments of civil engineering in U. S. schools.

• **Tax exemption for donors**—In a booklet explaining the 5 percent tax exemptions which corporations can enjoy by expenditures for educational, scientific and welfare purposes, Beardsley Ruml and Theodore Geiger say, in addition, that "many corporations which contribute to scientific research gain access to industrial and technological applications as a result of that research, which may more than repay expenditures."

• **Topographic mapping**—The U. S. Geological Survey concluded its first college training program in topographic mapping when 36 college-trained civil engineers from all along the eastern seaboard received their diplomas recently at Clemson College, Clemson, S. C.

(Continued on page 82)

SPEED UP HANDLING JOBS

with Bethlehem Braided Slings

If some of your lifting and moving jobs are crying for faster action, Bethlehem strongly suggests that you consider braided slings.

This type of sling has the very real advantages of high flexibility, resistance to kinking, and general ease of handling. All these factors contribute to speed in rigging and a faster flow of material. Then, too, Bethlehem braided slings are "huggers"—fit snugly around the contours of the load—and they can be made in sufficiently large sizes to have tremendously high strengths.

Of course, the braided sling is but one of the many choices that Bethlehem makes available. If you feel that your needs are better served by a nonbraided type—either standard or special—our plant can readily handle your order to specifications. Remember: we are fully set up to furnish *every* class of sling, and our designing and manufacturing units are unsurpassed anywhere in the country.

Here's a suggestion: send us your prints, drawings, or sketches showing the kind of handling problem you have in mind. Braided slings may well be the answer; but if another type seems more logical for your application, we'll tell you so frankly. Before you take this step, however, you may prefer to look over our slings catalog. Ask for a free copy; it will be mailed promptly.

BETHLEHEM STEEL COMPANY
BETHLEHEM, PA.

On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation. Export Distributor: Bethlehem Steel Export Corporation

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The Best Method for Piping!

A METHOD with plenty of meaning, that's Victaulic... it's the world's best. The Victaulic name stands for pioneering and leadership in quick, dependable piping... the Victaulic Method stands for quicker, money-saving piping construction.

Here's what the VICTAULIC METHOD *is* and why it's the EASIEST WAY TO MAKE ENDS MEET...

- A complete line of simplified, versatile pipe couplings ¾" through 60" sizes for steel, spiral and cast iron pipe ... that automatically provide flexibility for irregular laying contours and yet assure positive-lock, leak-proof joints even under extreme pressure, vacuum or strain conditions.
- A complete line of modern Full-Flow Elbows, Tees and other Fittings that provide for directional changes, branch lines and all of the other essentials of a piping system.
- Handy, portable Vic-Groover Tools that prepare the pipe twice as fast and with half the effort of conventional pipe threader.

On your next piping job — new construction, repairs, or alterations — try the Victaulic Method and you'll be sure to save time, work, and money.

Make that next piping job ALL VICTAULIC! Write today for Victaulic Catalog and Engineering Manual No. 44-8D.

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27TH VICTAULIC YEAR

The easiest way to make ends meet
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PIPE COUPLINGS AND FITTINGS

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Education research . . .

• **The production of scientists**—A 5-year survey on the origins of American scientists was conducted by Profs. H. B. Goodrich and R. H. Knapp of Wesleyan University, Middletown, Conn. It showed that 39 of the 50 institutions leading in the production of scientists were small liberal arts colleges. Reed College, of Portland, Ore., stood first with an index of 131.8 Ph.D.'s per thousand. California Institute of Technology was second with 70.1. The authors of the survey said: "The low ranking of the technical schools in this respect is due to the fact that their training is mainly for engineers, not scientists. An engineer receiving a bachelor's or master's degree in a technical school is ready to take a job and does not usually go on to get a Ph.D."

• **Health project**—About 16 acres of land have been bought by the federal government in Cincinnati, Ohio, as the first step towards building a $5,000,000 laboratory for the Industrial Hygiene Division, U. S. Public Health Service. The work of this laboratory will be integrated with that of the Environmental Health Center Laboratory now rising on an adjoining site. Only preliminary plans are being prepared at present.

Faculty news

W. C. Schoeller, consulting civil engineer of Dallas, Tex., has been made head of the civil engineering department of Lamar State College of Technology at Beaumont, Tex. Schoeller has also taught at Southern Methodist University at Dallas.

Prof. Matthew McNeary has been appointed head of the University of Maine's engineering drafting department at Orono. He succeeds the late Prof. Benjamin Kent. The university also announced that two instructors in its College of Technology have been promoted to assistant professor. They are Andrew J. Chase and Kern C. Jackson.

David B. Stansel, who has been connected with the personnel office of the N. C. State Highway Department at Raleigh, has been appointed assistant director in charge of engineering services with the North Carolina State College Extension Division at Raleigh. He succeeds Paul E. Picket, who has been called to active duty with the Air Force. Stansel will be in charge of the administration of short courses and extension classes in engineering throughout the state, and the supervision of other adult education in the engineering field.

MEETINGS

R. D. Adams has been elected president of the North Carolina Concrete Masonry Association. Other officers: Floyd McLaud, vice-president; and H. J. Stockard, Jr., re-elected secretary-treasurer. Directors: T. F. Bradshaw, J. B. Linville, A. S. Johnson, C. R. Briles, W. C. Chambers, J. A. Thompson. The association has voted to provide financial assistance to the engineering and architectural foundations at North Carolina State College, Raleigh.

Wylie W. Gillespie, of Smith & Gillespie, Jacksonville, was elected president of the Florida Board of Engineer Examiners. At the same meeting Sam W. Turnbull of Tallahassee was elected vice-president and Dean Joseph W. Weil of Gainesville secretary-treasurer. Other members of the board are J. Wylie Kick of Miami and Alexander Blair of Lake Placid.

Blinded by an explosion, and still in hospital, Douglas P. Doty, 36, of Malden, Mass., became the first member of the Seabee Veterans of America to receive a life membership. The honor was awarded at the Seabee annual convention in Boston. Doty served in the Pacific for three years with the 58th Naval Construction Battalion.

The fall meeting of the New England Sewage Works Association will be held on Nov. 6 and 7 at the Sheraton-Biltmore Hotel in Providence, R. I. Industrial waste treatment will receive considerable emphasis. There will be several papers by authorities. Also included in the program is a symposium on high-rate trickling filter design and operation.

Eugene Armstrong of Owensboro is temporary president of the Kentucky Primary Highway Federation, organized to promote better highways in the state.

More than 400 members of the Seabee Veterans of America attended the fifth annual convention in Boston, Mass. Highlighting the program were an afternoon business session, and a landing-strip construction demonstration at night on Braves Field. The demonstration ended with the arrival by helicopter of Miss Betti Pearson of Bowling Green, Ky., who is "Miss Seabee of 1951." Accompanying her on the flight was James A. Roche of Everett chairman of the convention.

CALENDAR

Public Works Congress and Equipment Show, Memorial Bldg., Detroit, Mich. Sept. 16-19.

S. D. Water and Sewage Works Conference, Chas. Gurney Hotel, Yankton. Sept. 19-21.

9th International Road Congress, Permanent International Association of Road Congresses, Lisbon, Portugal, Sept. 24-29.

First Pan American convention, International Road Federation, Municipal Palace, Lima, Peru, Oct. 5-6.

Federation of Sewage & Industrial Waste Association, Municipal Auditorium, St. Paul, Minn., Oct. 8-11.

Concrete Reinforcing Steel Institute, semi-annual meeting, Grove Park Inn, Asheville, N. C., Oct. 8-13.

Structural Engineers Association of California, The Ahwahnee, Yosemite National Park, Calif., Oct. 11-13.

American Society of Planning Officials, national conference, William Penn Hotel, Pittsburgh, Pa. Oct. 14-18.

Street Maintenance and Sanitation Officials, Ohio, Hotel Pick-Ohio, Youngstown, O., Oct. 18-19.

Engineers Council for Professional Development, Statler Hotel, Boston, Mass., Oct. 19-20.

National Council of State Boards of Engineering Examiners, Statler Hotel, Boston, Mass., Oct. 21-24.

Engineers' Society of Western Pennsylvania, water conference, William Penn Hotel, Pittsburgh, Pa., Oct. 22-24.

American Society of Civil Engineers, annual meeting, Statler Hotel, New York City, Oct. 22-25.

National Standardization Conference, Waldorf-Astoria Hotel, N. Y. City, Oct. 22-24.

American Association of State Highway Officials, Fontinelle Hotel, Omaha, Neb., Oct. 23-26.

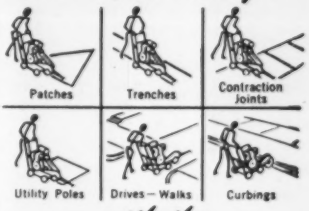
American Institute of Steel Construction, Inc., annual meeting, The Greenbrier, White Sulphur Springs, West Va., Oct. 22-25.

California section, American Water Works Association, Fairmount Hotel, San Francisco, Oct. 23-26.

Florida Sewage and Industrial Wastes Association and Florida section A.W.W.A. Princess Issena Hotel, Daytona Beach, Fla. Oct. 28-31.

American Concrete Institute, regional. Sheraton Hotel, St. Louis, Mo. Oct. 30-31.

Save by Sawing...



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You save Time and Material when you cut straight, smooth edges with a Clipper Concrete Saw before breaking out for patches, trenches or machinery bases. Eliminate radial cracks—stop spalling! Imagine... Saw up to 12' per minute 1" deep in Limestone aggregate concrete!

Saw ¼ slab depth... then break out. Only a minimum of replacement material necessary!

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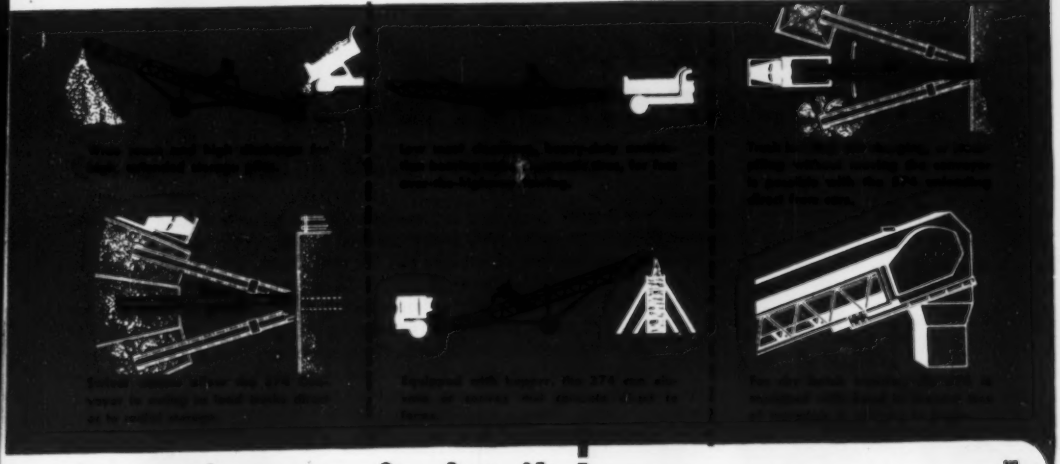

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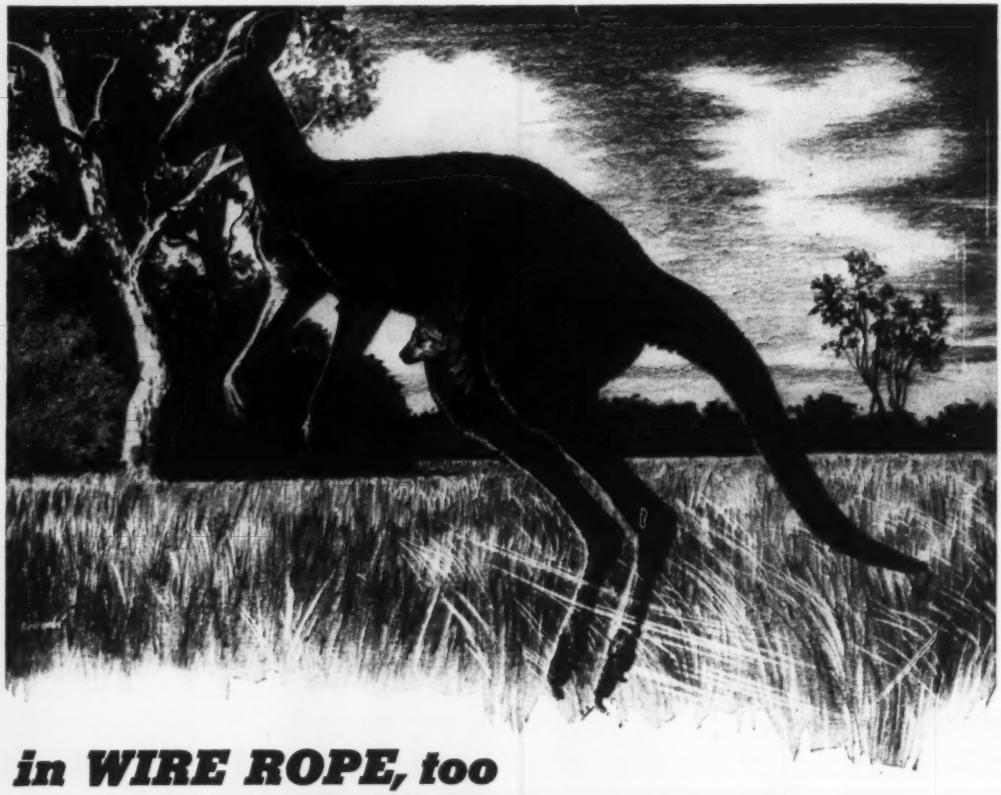

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OBITUARY

George D. Rivers, 78, a former civil engineer for Rochester, N. Y., died Aug. 21. He entered the employ of the city in 1918 and worked in the engineering department until 1945 when he was transferred to the Department of Public Works. He remained there three years and retired.

Charles L. Harrison, 72, Cincinnati, Ohio, civil engineer, died Aug. 19.

E. A. Blanpied, 69, civil engineer at Kansas City, Mo., died Aug. 18. A graduate in civil engineering from the University of Kansas, for 20 years he was with the Kansas City Bridge Co., and formerly was similarly associated with Herrington-Howard & Associates. At one time he was with the U. S. Engineers.

August Manny, 71, Dayton, Ohio, consulting engineer and construction supervisor for the Platt Iron Works, died Aug. 17. He was with Platt for 45 years.

Ralph C. Soots, 56, Indianapolis, building contractor, owner of Ralph C. Soots & Sons for the last 25 years, died Aug. 18.

Frank R. Miller, 53, owner of Miller & Son, Columbus, O., paving contractors, died Aug. 19.

Gustave W. Wahlfors, 57, civil engineer with the Federal Supply Service of the General Services Administration, died Aug. 20 in Washington, D. C. He was a federal employee for 32 years and during World War I was in the Engineer Corps.

Arthur A. Wotier, 63, retired Navy Department engineer, died Aug. 19 in Hyattsville, Md. He was graduated from St. Louis University and later studied at Yale University. After his retirement from the Navy Department four years ago, Mr. Wotier taught engineering courses at Columbia Technical Institute.

John J. Gleeson, 45, a construction engineer, died Aug. 17 in Bethesda, Md.

Myers Hand, 74, retired engineer with the defunct Federal Works Agency's Supervising Architect's Office, died Aug. 18 in Washington, D. C. He spent most of his professional career with the Architect's Office, retiring in 1945.

William C. Markham, 70, former associate building construction engineer for the New York State Department of Public Works, died Aug. 18 in Troy, N. Y. Before retiring from state service early this year, he had been in charge of the renovation of the Assembly and Senate chambers in the capitol. Mr. Markham was employed by the State Department of Public Works from 1919 to 1920, when he resigned to become supervisor of construction of the Detroit Street Railway System.

Geo. F. Mueden, 70, retired civil engineer of the N. Y. City Board of Transportation, died Aug. 19. He served in the Barge Canal section of the State Engineer's office from 1905 to 1908. He then entered the designing, planning and construction departments of the N. Y. City rapid transit system.

Daniel Kolb, Jr. 25, engineer with the Louisville district, Army Corps of Engineers, died Aug. 17. He was a 1949 graduate of Louisville's Speed Scientific School and a veteran of the second world war.

Joseph J. Murray, 70, Newton, Mass., water commissioner for 17 years and former chairman of the city's public works commission, died Aug. 16 in that city. He attended Holy Cross College and was graduated from Massachusetts Institute of Technology in 1903.

Nathan C. Johnson, 69, one of the pioneers in improving the quality of portland-cement concrete, died at Englewood, N. J., on Aug. 26. He was widely known as co-author with George A. Hool of "Handbook of Building Construction," a two-volume work published in 1929.

A graduate of Cornell University in 1906 as a mechanical engineer, Mr. Johnson soon went into building construction and developed his special interest in concrete while serving as engineer of tests for the Raymond Concrete Pile Co. from 1913 to 1915. At that time he wrote a series of articles for ENGINEERING RECORD on such subjects as the use of the microscope as an aid to proportioning concrete for strength, and the effect of sand on the quality of concrete.

In 1915 Mr. Johnson left the Raymond Concrete Pile Co. to go into consulting work, where he continued an active interest in concrete. In later years probably his major contribution to developments in that field was his continuing willingness to challenge orthodox practices or established standards whenever it appeared to him that they were checks on progress.

(Continued on page 88)

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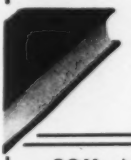

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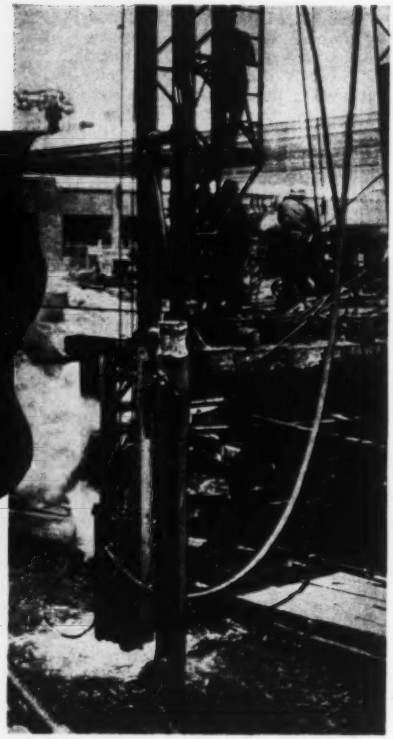

McKiernan-Terry 11-B-3 Double-Acting Pile Hammer driving 85-ft. steel H-beams for the 4000-ft. bridge over Carritos Channel. Terminal Island, Cal. Proctor & Kuhn, sub-contractors to United Concrete Pipe Corp.

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Obituary . . .

John J. Desmond, 69, consulting engineer and former division engineer of the Chicago terminal division of the Illinois Central Railroad, died Aug. 25. He returned in 1946, following 46 years with the Illinois Central and had since served in a consulting capacity with the Norvelli Construction Co., Chicago.

Andrew King, 72, a consulting engineer of Penn Valley, Pa., died on Aug. 21 in Dayton, Ohio. He was an inventor and manufacturer of a portable device for testing the hardness of steel. He was a graduate of the University of Pennsylvania. He had been a consulting engineer for The Philadelphia Evening Bulletin.

L. R. Burgess, 30, chief of the Seismological Operations Section of the Washington office of the Coast and Geodetic Survey died in San Francisco Aug. 22. He was a graduate of William and Mary College and had an engineering degree from New York University. He served as observator in charge of the Honolulu Magnetic Observatory for three years.

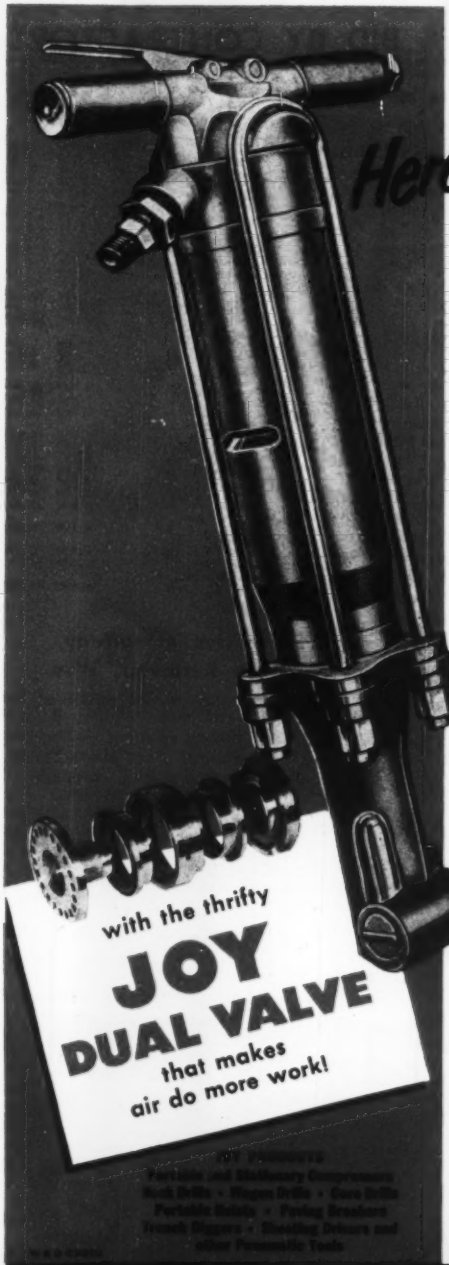
Fred E. Clark, 76, builder and contractor in Northern New York for many years, died Aug. 22 at his home in Tupper Lake, N. Y. He remained active in the business for nearly 50 years until his retirement about two years ago.

Charles W. Denniston, 75, upstate New York contractor, died Aug. 23 in Rochester. He was president of the LeRoy Polpropria Pavement, Inc. and a former president of the National Builders Supply Association. He headed the American Clay and Cement Corporation from 1920 to 1932, and Jamestown Macadam, Inc. from 1922 to 1947.

Edward L. Page, 60 died on Aug. 28 at Springfield, Mass. He was a leading civil engineer of the Connecticut Valley and was in charge of many building projects in the Holyoke-Chicopee area, housing jobs in New Jersey and in New Bedford, Mass., and the Calvin Coolidge Bridge in Northampton, Mass. He was also a consultant for contractors.

Robert L. Smart, 84, former superintendent of streets of Waukegan, Ill., and partner in the cement company of Thomas and Smart, died Aug. 23.

Frank V. Carroll, 63, consulting engineer and formerly chief engineer of the Indiana Harbor Works of the Inland Steel Co., died Aug. 25 at Munster, Ind. He had been with the steel company for 30 years.



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UNIT PRICES BID BY CONTRACTORS

Liberty Dam, Gate House, Patapsco River, Md.

The only bid among ten below the engineer's estimate, $4,476,018 took the contract for Liberty Dam and Gate House awarded August 8, 1951, by the City of Baltimore, Md. The Arundel Corp. of Baltimore, low bidder, was more than 2% below the engineer's estimate, 4% below the second bidder, and more than $3 million under the high bid.

J. S. Strohmeyer, city water engineer, is the engineer on the job. The dam will be located on the North Branch of the Patapsco River, some two miles northeast of Marriottsville, and the gate house will be located approximately one and one half miles further upstream. The dam measures 704 feet long from abutment to abutment, with the spillway crest 480 feet long and 160 feet in height.

Work will begin in September 1951 and must be completed within 730 days, or a penalty of $200 per day for each day's delay beyond that period must be paid by the contractor. All materials will be furnished by the contractor. The job is two miles from a railhead.

Concrete called for in the unit prices requires: Class 1, 7.5 bags of cement per cu yd; Class 2, 6 bags; Class 3, 5 bags; Class 4, 4 bags; and Class 5, 3 bags. Classes 3, 4 and 5 also call for 94 lbs of fly ash per cu yd of concrete. The crane specified in the unit prices is a circular type electric traveling crane of 3 ton capacity.

Minimum wage rates are: common labor, $1.38; dump truck drivers, $1.40; bulldozers and tractors, $1.825; iron workers, $2.80; and power operators, $2.60.

Bidders included:

1 The Arundel Corp., Baltimore, (Contract)	$4,476,018
2 Merritt-Chapman & Scott Corp., New York, N. Y.	4,655,989
10 S. A. Healy Co., White Plains, N. Y., & Baltimore Contractors, Baltimore	7,714,232
Engineer's estimate	4,587,175

Items	Quantity	Unit prices 1	2
Stream contr, at dam	ls	$150,000	$368,000
At gate house tower	ls	10,000	6,000
Excav, uncl for dam	cy	155,740	4.00	5.00
Core wall	cy	1,100	15.00	40.00
Cut-off trench	cy	1,900	26.00	40.00
Uncl, for gate house int tower	cy	320	20.00	135.00
Foundn preparation	sy	14,000	7.00	3.00
Line drilling	lf	26,000	1.00	1.85
Concrete, in balustrade, Cl 1	cy	80	265.00	150.00
In abutment wall, beam, floor slab & pier, Cl 2	cy	1,000	100.00	85.00
In gate house, below el 433, Cl 3	cy	4,060	45.90	46.00
Above el 433, Cl 2	cy	300	132.00	150.00
In apron of dam, spillway steps, side walls & training walls, Cl 4	cy	13,850	23.30	20.00
Mass concrete in dam proper & both faces of dam, Cl 4, 5	cy	138,500	14.86	12.00
Portland cement	bbl	132,000	3.50	4.00
Fly ash	T	7,350	5.00	10.00
Steel reinfm	lb	317,400	0.12	0.12
Surf of floor	sy	1,490	3.70	4.00
4" drain tile	lf	200	1.20	2.00
Drill drainage hole	lf	1,020	5.50	6.30
Grout holes	lf	5,140	3.30	5.00
Grout pipe	lf	8,200	1.00	0.80
Mix & place grout	cf	2,500	2.40	4.00
Contraction plates	lb	19,100	0.15	2.00
Expansion joint filler	lf	530	0.70	1.50
Misc iron & steel work	ls		2,640	10,000
Iron castings	ls		530.00	15,000
Flanged special	ls		560.00	16,000
Bell & spigot pipe & fittings	ls		860.00	1,500
Pipe rail & barricades	ls		2,750	8,600
Aluminum ladder	ls		4,100	4,500
Screen & stop log grooves	ls		14,400	28,000
Stop logs	ls		5,700	13,000
Screens	ls		7,100	10,000
Sluice gates (18.5' head), 36"x60"	ea	2	3,675	4,000
(63.5' head)	ea	4	5,150	5,000
(108.5' head)	ea	2	6,500	6,500
Copper spouting	ls		265.00	300.00
Door & grill	ls		3,350	3,000
Windows	ls		585.00	700.00
Crane	ls		8,850	10,000
Propeller type velocity meter	ls		6,150	8,000
Light & power systems	ls		6,000	12,000
Suspension bridge	ls		31,400	37,000
Field offices & other work	ls		50,000	30,000

Relocation of railway, Boysen Reservoir, Wyo.

The relocation of a section of the Chicago and North Western Railway on the Boysen Reservoir, Wyo., part of the Missouri River Basin Project, drew seven bids, 36% apart and all below the engineer's estimate. The Bureau of Reclamation awarded the contract for the work to the low bidder, $163,035, on July 17, 1951.

Minimum wage rates are: common labor, $0.85; skilled, $1.25.

Bidders were:

1 Peter Kiewit Sons,' Sheridan, Wyo	$163,035
2 Boatright-Smith, Rawlins, Wyo	198,518
7 Otis Williams & Co., Helena, Mont	243,826
Engineer's estimate	255,427

Items	Quantity	Unit prices 1	2
Excav, all classes, for roadway	cy	140,000	$0.38	$0.56
For structures	cy	300	2.00	3.00
Overhl of excav for roadway	sta cy	775,000	0.008	0.01
Watering	M gal	5,000	2.00	2.25
Rolling embankm	hr	600	6.00	6.00
Backfill	cy	2,360	1.25	0.40
Compacting	cy	2,360	1.25	1.80
Dry-rock paving	sy	100	10.00	4.00
Bit-coat CMP, furnish & lay, 12-gage, 24" dia	lf	380	8.00	9.00
10-gage, 36"	lf	122	12.00	15.00
8-gage, 42"	lf	188	18.00	19.00
60"	lf	178	30.00	30.00
Bit-coat CMP arches, 8-gage, 50" span x 31" rise, f & l	lf	80	22.00	22.00
Bit-coat multiple plate CMP, 8- gage, 66" dia, f & erect	lf	54	42.00	38.00
8-gage, 78"	lf	44	48.00	45.00
8-gage, 84"	lf	52	52.00	48.00
5-gage, 120"	lf	68	80.00	100.00
ROW fence, f & c	mi	6.6	1,500	1,780
Laying track	mi	3.3	6,000	9,000
Apply rail anchor	ea	4,230	0.10	0.08
Ballasting	cy	6,200	3.50	2.30
Balst mat'l, f to others	cy	300	2.00	2.50
Motor-car set-offs, f & constr	ea	6	150.00	150.00
Communicat line, constr	mi	3.4	500.00	1,200

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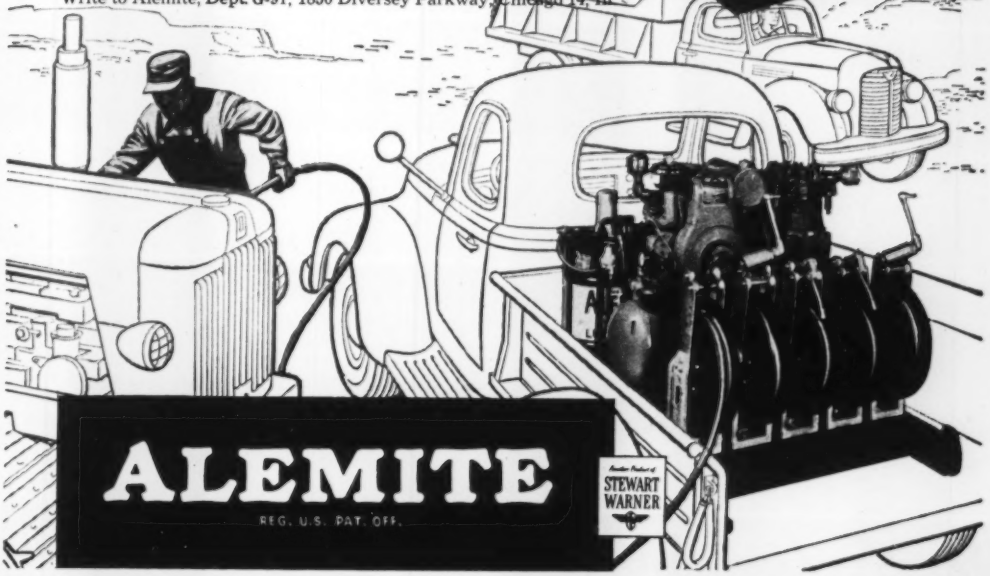

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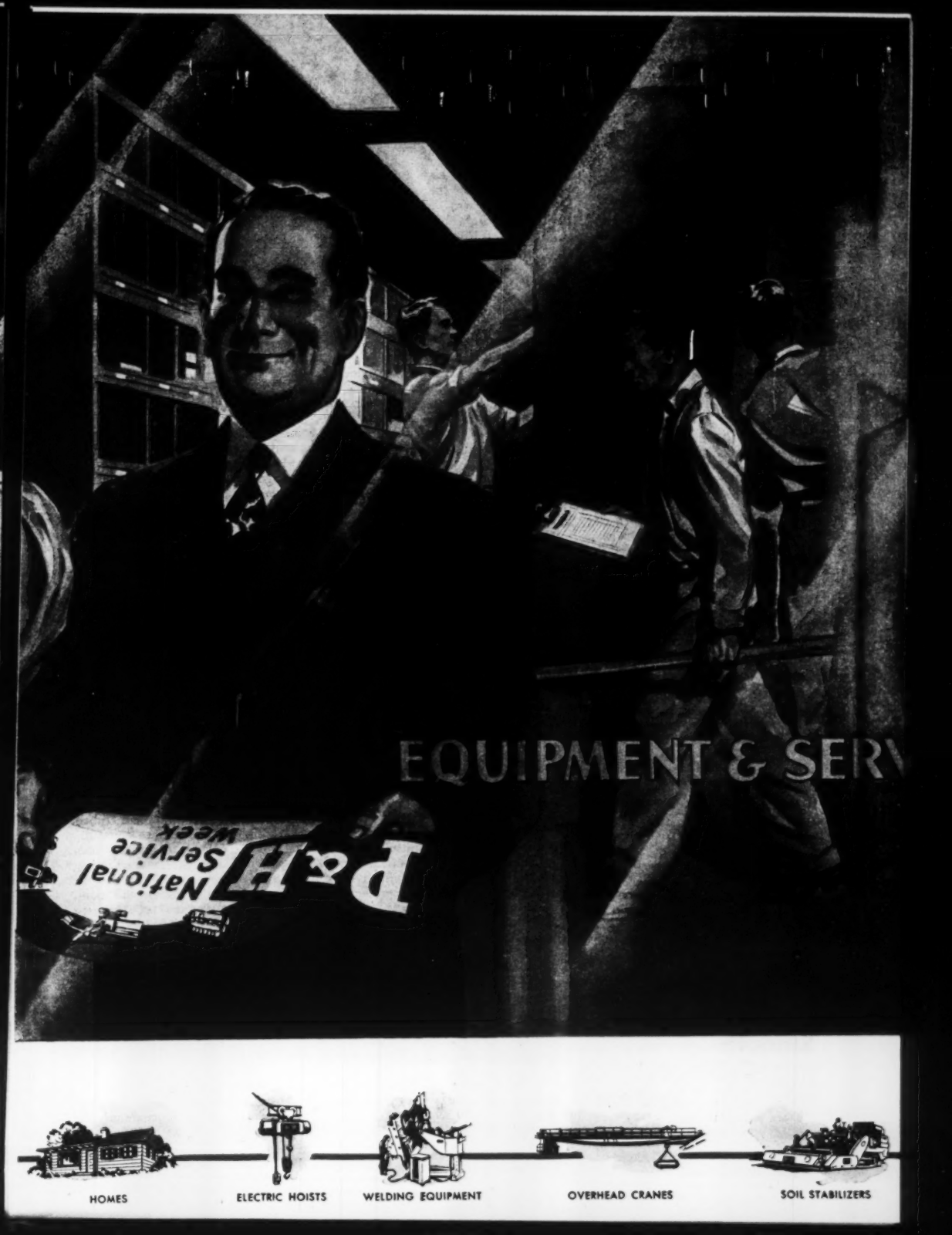

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LABOR

Wage increase of 5% seen due by winter

A sixth-round wage increase of five percent is due this winter, experts figured last week, as they surveyed probable results of the government's new cost-of-living formula.

This formula (ENR Sept. 6, p. 81) allows wage raises equal to the rise in the cost-of-living index of the Bureau of Labor Statistics since last January. The rise is on top of the 10% and any increases that may have been granted before the wage-price freeze date of Jan. 25.

Under the formula, there doesn't have to be a wage escalator plan nor even a union, and wage increases can be given every six months. That means, say the labor experts, more pressure from unions for reopening contracts that fix wages for longer than six month periods.

There are some special considerations for construction, worked out for the industry by the Construction Industry Stabilization Commission—mostly based on the area rates commonly paid in the industry, and on a somewhat different base period from which to figure cost of living increases.

• **Steel is key**—The key to the sixth round, though, will be steel. The last increase won by the CIO was in December—11%. So, when wages are negotiated this December (if not sooner by agreement), the steelworkers will be entitled to the full cost of living allowance since January.

And here's the gimmick: The BLS price index in January was 181.5. Now it is 185.5. By December, government economists say it will hit 190.

That would be about 5%. With steel wages now around $1.90, it figures to almost 10 cents an hour in steel.

The economists figure the unions will shoot for more—and may even get more, in the way of fringe benefits and the like—but the average will be about 7½ cents.

The wage policy is based on percentage—so higher paying industries will be stuck for more.

In each case, though, the amount of increase is fairly simple to figure: Take the percentage rise in BLS index from January, and you can give that much percent increase from Jan. 25—every six months, or, if you have a wage escalator, more often.

For construction, that would figure about 10.6 cents an hour, if the BLS index gets to the predicted 190.

CIO demands may kill union shop change

Chances that Congress will drop bargaining and union shop elections in the construction industry (ENR Aug. 23 p. 71) just about ended when the CIO opposed the legislation unless:

1. The bill before the Senate Labor-Management Subcommittee, S. 1973, is amended to permit union hiring halls in the maritime industry and
2. Protection is given to production-worker unions representing construction workers employed full time in plants.

The bill amending the Taft-Hartley labor law is backed by the powerful AFL Building Trades Department. Opposition by the CIO and the International Association of Machinists, AFL affiliate, underscores the crack in labor unity evidenced by the AFL's decision to break up the United Labor Policy Committee.

S. 1974 also would have permitted a union shop contract in the construction industry to require union membership seven days after employment, instead of the thirty days generally applicable under Taft-Hartley.

Another bill, S. 1959, which would drop only the union shop elections in all industries already has passed the Senate.

Because of bipartisan sponsorship, the bill had seemed fairly certain of passage. Sponsors were Senator Robert A. Taft, Ohio Republican and Hubert H. Humphrey, Minnesota Democrat.

David J. McDonald, secretary-treasurer of the United Steelworkers union, told the Senate subcommittee that the Congress of Industrial Organizations, which he was representing, supported the "purposes" of the bill.

However, by the time he had finished listing the reservations which the CIO would make in endorsing the legislation, he had made it clear that the organization would oppose the measure unless it was redrawn.

• **Hiring halls**—The CIO spokesman said that the bill would, in effect, give the AFL construction unions "hiring halls", and the CIO wants them, too, for its maritime unions.

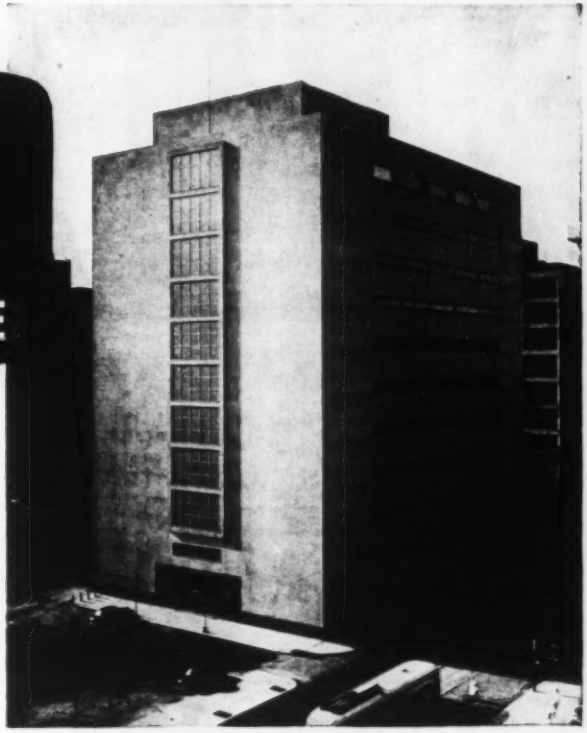
He said that when bills to legalize the hiring halls were introduced, the

(*Continued on p. 96*)

3091 FEET OF CLOW (threaded) CAST IRON PIPE

USED IN CONSTRUCTION OF MODERN COMMUNICATIONS BUILDING

Clow Cast Iron Pipe was selected for all 3-inch and larger downspout, waste and vent piping because of its superior features. More than 3,000 feet of Clow Pipe was cut, fitted and installed for such services in this new, distinguished structure.



Modern communications building recently erected in Chicago.

● ARCHITECTS: *Holabird & Root & Burgee*

● PLUMBING CONTRACTORS: *Hanley & Co.*

Here's why the Architects specified Clow (threaded) Cast Iron Pipe:

The Architects, Holabird & Root & Burgee say that Clow Cast Iron Pipe was specified on this job because of its long-lasting, corrosion-proof qualities.

It's a well known fact that Cast Iron Pipe has a useful service life of more than a century, thus eliminating the need for costly replacements.

Here's why the Plumbing Contractor chose Clow (threaded) Cast Iron Pipe:

"We chose Clow (threaded) Cast Iron Pipe because it lasts longer and gives better service than other types of piping," said Mr. Grable Weber, Vice President of Hanley & Co. "We have used Clow Pipe on a good many jobs and have found it easy to handle, which means a more rapid installation. Also Clow Cast Iron Pipe is readily available, which is important, at prices we consider quite reasonable."

Clow (threaded) Cast Iron Pipe has same O. D. as wrought pipe, is available with plain or threaded ends, in 3, 4, 5, 6, 8 and 10" sizes in 18' random lengths. Also available with integral calking hub on one end (other end plain) in 18' random lengths in 4, 6 and 8" sizes.

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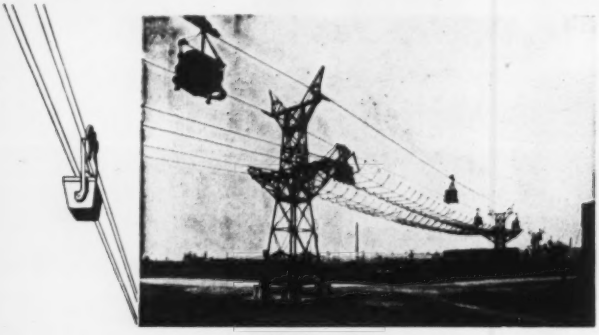

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Labor . . .

AFL urged that they be amended to include the construction industry.

• **Who does the work?**—Another major CIO objection to the bill as drafted is that agreements could be executed covering construction that normally does not come within the jurisdiction of the building trades unions, McDonald said.

The problem of relining a blast furnace for a steel mill was cited as an example by McDonald. In such a case, he said, the AFL might insist the job belongs to its unions. The AFL bricklayers union has tried to carve out a bricklayers' unit in a steel plant, McDonald said, but the National Labor Relations Board refused to break up the plant-wide unit represented by the United Steelworkers, CIO.

N. Y. builders fear loss of construction workers

Faced with what their leaders called a gradual shutdown of building activity, New York City contractors last week voiced their concern over loss of skilled workmen to other areas.

Led by the Building Trades Employers Association, the contractors have long been worried because—with little direct defense construction under way or in prospect—government restrictions on building bid fair to strangle the city's construction industry.

Normally, some 250,000 building tradesmen work in the New York metropolitan area.

Fred J. Driscoll, BTEA president, used an announcement by the New York State Department of Labor as springboard for a new plea for easing restrictions in the city. The labor department saw construction employment in August as 10,000 below a year ago.

Commenting on the announcement, Mr. Driscoll said: "The new order M4A and the Controlled Materials Plan hits multi-family apartment developments and commercial construction hardest. The order virtually prevents the start of new multi-family housing, which has been the backbone of the building industry in New York for some years.

"The industry thus faces serious dislocations and a complete breakdown of its essential teamwork. Our skilled craftsmen . . . will be forced to drift to other cities in search of employment."

Previously, BTEA officials have asked NPA for special consideration for the New York area, and other areas with similar conditions.

1939

1940

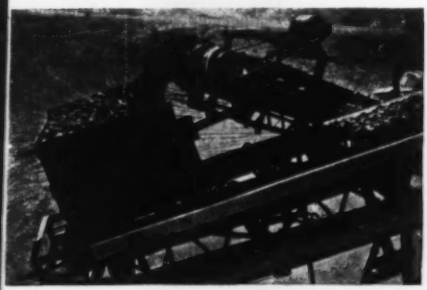
1942

4 Austin-Western CRUSHING PLANTS

for Arthur & Allen of Pueblo, Colorado

1949→

The man at the feed conveyor in the foreground is salvaging iron from the slag.



These conveyors are carrying the combined output of jaw and roll crushers.

Crushing slag from the Colorado Fuel & Iron Company's Pueblo plant to produce ballast for the Santa Fe, Missouri Pacific and Rock Island Railroads.

This, the fourth Austin-Western Crushing and Screening Plant purchased by Arthur & Allen over a ten-year period, has an average run of 350 tons per hour and has reached a peak output of 420 tons per hour. The finished product is, in almost all cases, 1½" minus to ⅜" plus. The percentage of crush is approximately 60.

Whatever your production requirements, an Austin-Western Plant, designed and tailor-made to meet them, will do the same sort of outstanding job for you. Let's talk it over.

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The loading hopper is arranged to accommodate two trucks at one time.

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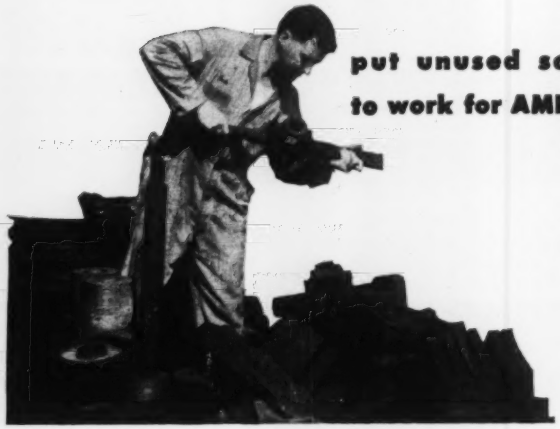

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LABOR

Impact of copper strike to have delayed effect

The copper shortage to result from a strike of 100,000 Mine, Mill and Smelter Workers against leading copper producing companys, will have it full impact several months from now.

Few construction projects are expected to be held up by the shortage. But many will face another hampering factor in the struggle to find building materials and short supplies. For many it is just another headache.

Severity of the shortage will depend directly upon the length of the strike. At the time the walkout occurred, industry was living on a day-to-day supply basis. Each day the strike continues, represents another day's production lost. Inventories serving as a cushion will not make up the difference.

On the strength of reports by a board of inquiry, President Truman has invoked injunction powers under provisions of the Taft-Hartley Act.

The strike is against Kennecott Copper Corp.; Phelps-Dodge Corp.; American Smelting and Refining Co.; and the Anaconda Copper Mining Co. Injunction was invoked against the International Union of Mine, Mill and Smelter Workers independent union; several railroad brotherhoods, and unions affiliated with the American Federation of Labor who refused to cross picket lines.

Labor briefs . . .

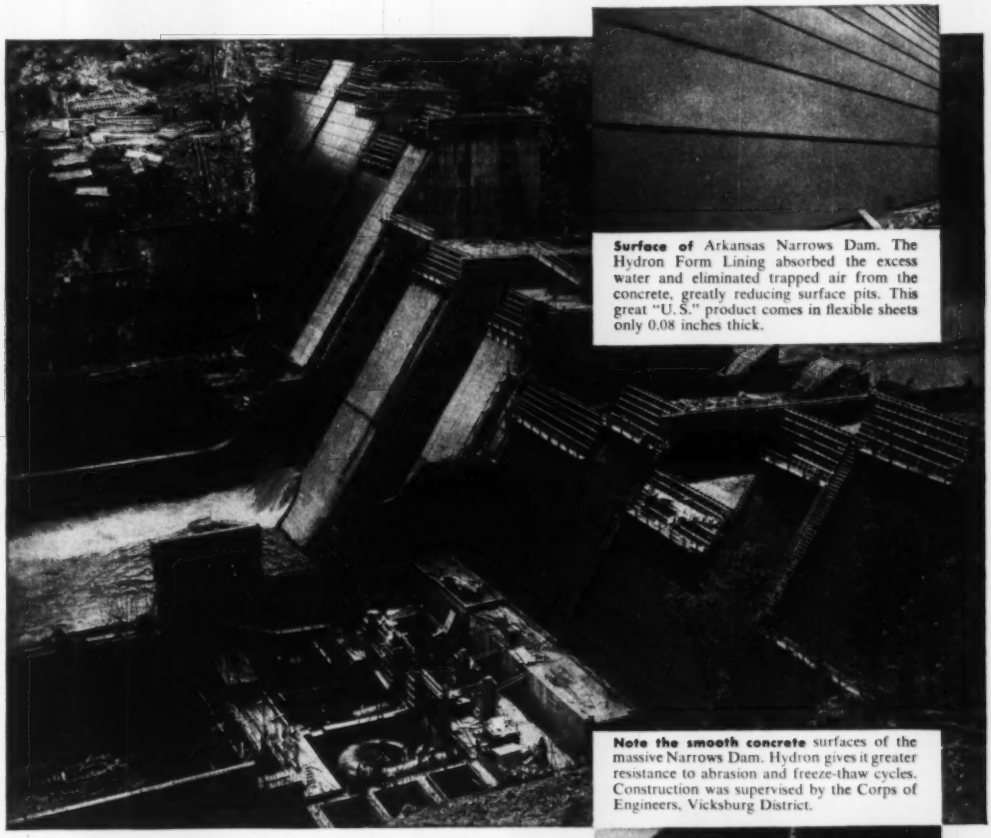
• **Michigan strike ends**—A 12-day strike of electricians at Flint, Mich., (ENR Sept. 6 p. 82) ended when a special CISC ruling approved a 10 cent hourly raise, previously blocked by the wage-price freeze order. Hourly rate is now $2.65.

• **N. S. carpenters get more**—Successful in their demands for $1.70 an hour, the Sydney, N. S. local of the International Brotherhood of Carpenters and Joiners returned to work, after the Cape Breton Contractors' Association, gave in to their demands. The raise is 30 cents an hour.

• **Pickets slow work**—Pickets, reportedly seeking to organize sheet metal workers in the district, slowed work on 100 new housing units for the Mercer County (Pa.) housing Authority. Tradesmen refused to cross the lines.

• **Laborers get raise**—Building trades laborers in the southern Michigan area have accepted a 12½ cents hourly wage increase offered by the Southern Michigan Contractors Association.

How does U. S. Rubber add to the appearance and durability of concrete?



Surface of Arkansas Narrows Dam. The Hydron Form Lining absorbed the excess water and eliminated trapped air from the concrete, greatly reducing surface pits. This great "U. S." product comes in flexible sheets only 0.08 inches thick.

Note the smooth concrete surfaces of the massive Narrows Dam. Hydron gives it greater resistance to abrasion and freeze-thaw cycles. Construction was supervised by the Corps of Engineers, Vicksburg District.

By providing Hydron Form Lining, which makes concrete smooth and resistant to abrasion and freeze-thaw cycles. Engineers and contractors who use Hydron will tell you that it produces a neat-appearing surface. Yet the total cost should not exceed 12¢ to 16¢ per square foot. Hydron also shortens working time, eliminates need for expensive hand rubbing. For more information write to address below.

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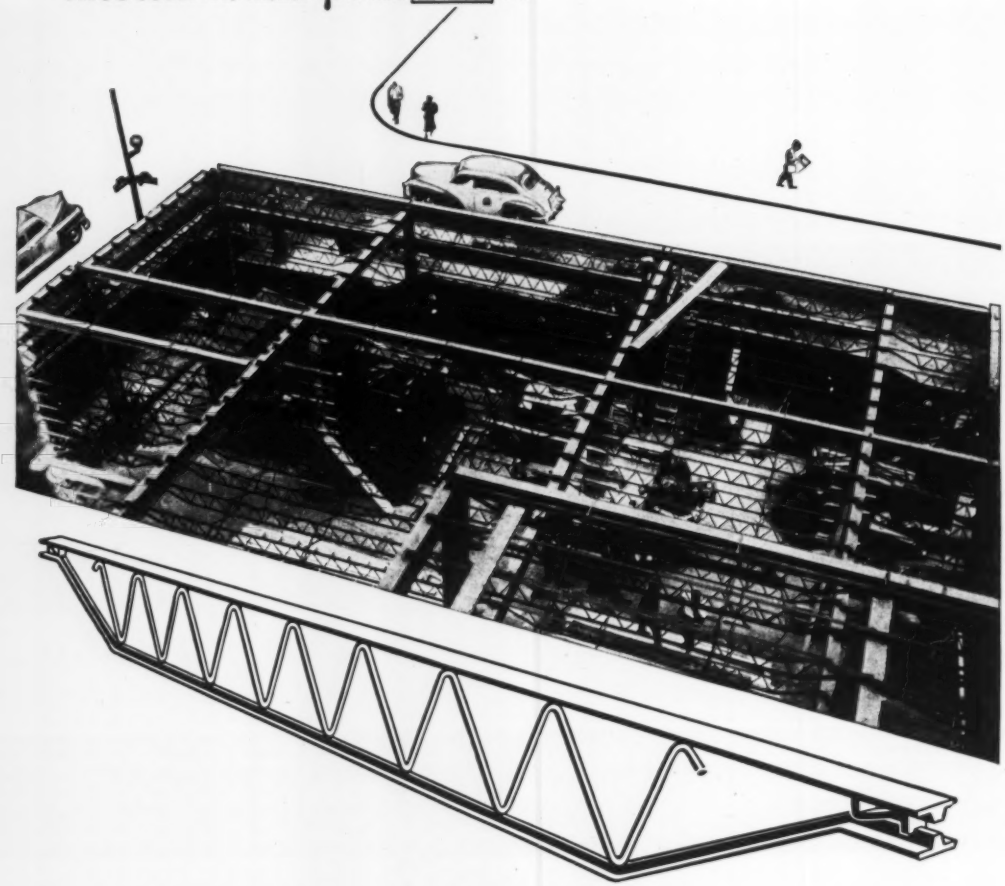

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Features include: Great rigidity through integral welding of wide tee-shaped top and bottom chords and a strong, round continuous web member. High fire resistance. Simple to install, being completely shop fabricated and reaching the job ready for placing. Each joist is "place-marked," greatly simplifying and speeding construction.

Open web allows passage of pipes and conduits in any direction.

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CONSTRUCTION BUSINESS

New housing credit terms coming up

The Housing and Home Finance Agency and the Federal Reserve Board are expected to issue new credit regulations this week. The new regulations are needed to "smooth out" the jump in down payment requirements for houses in the $12,001 to $14,000 price bracket.

The Defense Housing Act passed by Congress relaxes Regulation X credit controls on homes costing not more than $12,000.

Under Regulation X, issued October 12, 1950, by the Federal Reserve Board and the Housing and Home Finance Agency, down payments ranged upward from 10% of the purchase price (for a $6,000 house) to 50% (for a $25,000 house). Veterans rates were set somewhat lower; maturity periods were shortened, generally to 20 years.

• **Easier credit**—Under the new regulations, a veteran will be required to make a down payment of only $280 on a $7,000 house, a non-veteran will put down $700. Previously, the rate would have been $500 for the veteran, $1,200 for the non-vet. For a $10,000 home, the veteran is now required to put down only $600 in cash, instead of $1,300 and the non-vet $1,500, instead of $2,300.

• **Extend amortization**—In addition, both veterans and non-veterans (if they find the right lender), will have smaller monthly payments, because they are now permitted to get mortgages for 25 years, instead of 20.

• **Not affected**—Homes priced over $12,000 are not affected by the new credit rules, although HHFA and FRB will no doubt modify some down payment requirements in the "transition" group between lower-cost homes, up to $12,000 and those in the $25,000 or more bracket.

• **Defense housing**—There is a special provision for programmed defense housing for military personnel and defense workers in defense areas designated by the President. For these defense houses, all restrictions are suspended by the new law.

• **Certify 40 areas**—So far, the Defense Production Administration's defense housing areas committee has certified 40 areas for some 26,000 units. Presumably, the President will designate these areas.

Defense areas will require 125,000 to 250,000 programmed housing units, plus many more not programmed for defense purposes.

• **Will the brakes hold?**—Mortgage money and materials are the only existing brakes on housing starts from here on out. With 670,000 starts in the first seven months—including some 60,000 public housing units, 1951 may run up to 1 million or more. Next year would top 1951—if materials and money were available.

Mortgage money is expected to ease in the fourth quarter, but it will remain relatively tight during the first and second quarters of 1952. Even so, there will be an increase in starts over the current seasonal rate in the first half of next year—unless the National Production Authority checks the upward swing with tighter Controlled Materials Plan rules.

Interior Budget Covers Broad Construction Funds

Broad appropriations for construction are included in the Interior Department Bill which has been signed by President Truman.

The construction and rehabilitation program under the Bureau of Reclamation received $202 million. Major projects included under these funds are:

Gila project, Ariz. $6.2 million; Davis Dam project, Ariz.-Nev. $8 million; Cachuma project, Cal. $10 million; Colorado Big Thompson project, Colo. $19 million; Hungry Horse project, Mont. $22 million; Columbia Basin project, Wash. $27 million; Eklutna project, Alaska $5.7 million.

Missouri River Basin project: $40.5 million including $8 million for the Cheyenne division; $8 million for the Helena-Great Falls division; and $14.9 million for the transmission division.

An appropriation of $1.6 million is made available for work toward completion of construction of the distribution system of the Coachella division of the All-American Canal.

• **Funds for power**—The Bonneville Power Administration is listed for $67.5 million in new construction. Southwestern Power Administration receives $3.3 million. Funds for construction in the Southeastern Power Administration are reported in disagreement.

• **Other moneys**—Appropriations for the Bureau of Indian Affairs carry provisions for $12 million in construction.

Alaska public works receive $7 million; construction of roads, $20 million; railroad construction, $2 million. Virgin Islands public works have $1 million.

A total of $21.3 million is recommended for the activities of the Geological Survey, primarily for surveys and mapping.

Clay pipe pricing hit

The Federal Trade Commission released an order Aug. 31 prohibiting 17 manufacturers of vitrified clay sewer pipe from "engaging in any combination or conspiracy" to fix prices of their products. Confirming an FTC trial examiner's initial decision (July 18), the order specifically forbids use of a zoning method of computing or formulating delivered price quotations.

In addition to the 17 manufacturers cited, the order also is entered against the Clay Sewer Pipe Association of Columbus, Ohio.

Specifically, the order forbids:

Composing or announcing prices for any destination at which products are quoted or sold, through the use of a basic price list or percentage discounts therefrom; using, in common, any freight rate compliation as a factor; using, in common, a zoning method of computing delivered price quotations; discriminating in price between different purchasers.

Establishing or maintaining uniform terms of conditions of sale to dealers or jobbers, allocating sales between and among the manufacturers, dealers or jobbers, or maintaining a list of jobbers.

The order provides for dismissal of a second count of the original complaint —charging price discrimination in violation of the Clayton Anti-Trust Act.

Material output declines; reverses 3 month trend

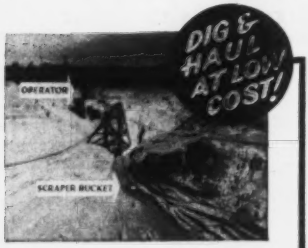
Production of building materials reversed a three month trend during June, the U. S. Department of Commerce reported this week. During March, April and May, the production index climbed steadily. In June it fell.

The June index figure (unadjusted, 1913 = 100) was 175.5, compared with a revised May figure of 180.8.

Only five components of the index reflected increased production in June. Cement advanced to 215.8, up six-tenths of a point over May. Fabricated structural steel climbed from a revised May figure of 195.4 to 214.2 in June. Mechanical stokers were up four points. The June reading was 15.6. Gypsum board jumped 12.8 points, going up to 875.9. Gypsum lath also rose, advancing to a June reading of 263.9, compared to 258.6 in May.

• **Others fall off**—All other components in the Department of Commerce index fell off during June. Lumber dropped from 158.3 to 152.7; hardwood flooring declined from 193.7 to 168.3. Brick slid 1.2 points

(Continued on page 102)



Move more yardage for less money with the versatile Sauerman Power Drag Scraper. One man controls digging, hauling and dumping from an outside spot. Exclusive Crescent Scoop digs a heaping load of earth or bulk material in very few seconds, hauls its load rapidly hundreds of feet, using little power. First cost is moderate, upkeep simple. So for greater performance and economy, depend on superior Sauerman Power Scrapers!

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for a June reading of 152.4.

Wire nails had an index figure of 130 in June, down 7.5 points from May. Concrete reinforcing bars were 144, compared with 153.9 for the previous month. Rigid steel conduit and fittings lost 1.3 points. June level was 251.5.

Galvanized range boilers posted a June index figure of 58.2 compared with 63.7, the revised May figure. The index for cast iron soil pipe and fittings dropped from a revised May figure of 218.1 to 209.4 in June. The index for softwood plywood declined from 273.9 to 269.3.

Asphalt prepared roofing was down to 161.5 from a May figure of 172.2. Production index for asphalt siding-felts-dropped sharply from 202.6 in May to 155.5 in June. Structural clay tile was down to 117.5 in June and clay sewer pipe declined to 154.8, from the May figure of 161.3.

Rules change on bars

If you want reinforcing bars for delivery after Sept. 30, you will have to make out an authorized CMP allotment order for your supplier. Otherwise he won't be able to get the steel for the bars you want.

Until last week, fabricators of reinforcing bars got their allotments of steel directly from the National Production Authority. They did not have to use authorized CMP orders from their customers to obtain the needed steel.

But NPA has changed the classification of reinforcing bars, making them an "A" product instead of a "B" product. The change takes effect Oct. 1. For deliveries from that date forward, the buyer will have to give his supplier a CMP allotment order.

Another result of the change is this: reinforcing bars must now be included in totaling the construction steel for self-certifying projects and also—on CMP-4C applications to claimant agencies or NPA industry divisions—for authorized construction schedules and related allotments of controlled materials.

Merritt, Chapman & Scott reports 6 months earnings

Merritt, Chapman & Scott Corporation, one of the leading construction companies, had net earnings of $1,079,860, equal to $2.55 a common share in the first six months of this year, Raymond F. Kopp, president, reported yesterday.

Earnings include the profits accrued to June 30 on all construction jobs in progress, whether started this year or previously. The report has been made on the firm's new accoun ing method of taking profits on co struction jobs on an accrual basis.

Previously, Merritt, Chapman Scott used the completed-contra method under which profits on co struction jobs were taken only whe the work was completed.

The new accounting method w adopted in the belief that reporte earnings would be subject to less flu tuation and would more accuratel reflect the earnings performance yea to year.

Gross revenues for the first si months rose to $29,085,521, includin reimbursable costs on cost-plus-fixed fee contracts. In 1950, revenues fo the first six months were $17,590,015 adjusted to include $1,816,081 of re imbursable costs.

Construction work on hand or June 30 amounted to $83,734,006, compared with $52,388,291 during the same period last year.

Navy plans $30 million aircraft plant near Detroit

The Navy has announced that it plans to build a $30 million plant near Detroit for assembly and testing of jet aircraft engines for the Department of Defense. (ENR July 19, p. 105)

Construction of the plant will be given a high priority. Completion is expected early in 1953. The plant will be operated by the Chrysler Corporation, the Navy said.

Site of the plant will be a 306 acre tract in Sterling Township, McComb County, just west of Detroit. To expedite construction, preparation of the site will be started while final plans are still being drawn. Albert Kahn Associates, of Detroit, are preparing working plans and specifications.

Amortization freeze thaws; urgent projects certified

The "freeze" on five-year amortization is thawing. Urgent projects now are being certified by the National Production Authority in this order:

"Deadline" projects get first priority. These are projects which were started before the law was enacted and which can't qualify unless they are approved before September 23.

Facilities for military end-items come next. NPA is sifting these out of pending applications to avoid delaying arms-making facilities.

Third on the priority list is facilities for producing raw materials, such as chemicals, metals and cement. The

(*Continued on next page*)

plan is to pass on these applications as soon as the "deadline" projects and military end-item facilities are screened.

Many applications for amortization face delay. The defense agencies are trying to get together on a long-range policy which will gear all government-aided expansions into the industrial needs of mobilization. It is a question of putting first things first. Until this long-range policy is drawn, certificates of necessity will be issued only to those projects which can show an urgent need.

NPA issues new copper rule

The National Production Authority has issued a new ruling to copper manufacturers requiring them to fill only Controlled Materials Plan orders after October 1.

NPA told the copper makers not to fill any other types of orders after that date. Defense-rated and non-rated orders that have not been converted to CMP orders before October 1 are to be canceled on that date.

Similar directives are expected for steel and aluminum, the other two controlled materials.

Business briefs . . .

• **Lumber production**—Lumber shipments of 488 mills reporting to the National Lumber Trade Barometer were 5.3 percent below production for the week ending August 25. New orders were 8.7 percent below production and unfilled orders amounted to 46 percent of stocks.

• **Boeckh index drops**—The E. H. Boeckh and Associates index dropped three-tenths of a point for the month of July. The June figure of 238.1 compared with July's 237.8 for all types of construction combined.

• **How to be "cleared"**—The Munitions Board of the Department of Defense has issued a booklet telling firms bidding on defense contracts how to be "cleared" to handle classified information. Entitled "How to be Cleared for Handling Classified Military Information Within Industry", the booklet may be obtained from the Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C. Copies are 10 cents each.

• **Governor wants market**—Gov. Paul A. Dever has recommended to the Massachusetts legislature that a $14 million central market be authorized for construction in Boston. Last year, the legislature created a market authority and gave it power to issue bonds for construction. However, location of the market was not decided at that time.

ATLAS SPEED SYSTEM OF STEEL FORM CONSTRUCTION

Here's Your Solution To High Cost Form Labor

The same forms can be used for walls, slabs, circular tanks, sewers, tunnels, manholes, etc.

STEEL FORMS—Good for reuse again and again on job after job indefinitely without repair. Cut material costs way below wood.—Many records of 400-500 and more uses.

SPEED Steel Forms—Can be set up, stripped, cleaned and moved in way less time . . . No heavy bracing needed.

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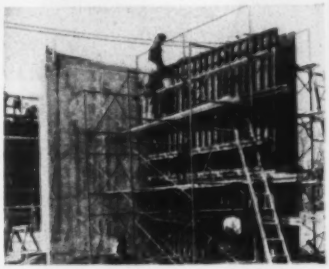

Write Department *RN* for complete facts.

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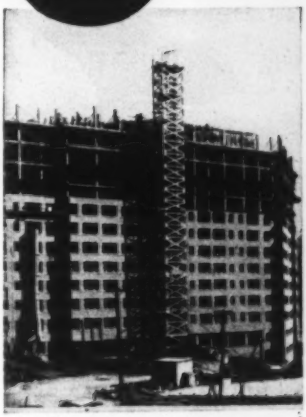
20 Vesey Street, New York 7, N.Y.

Atlas *Labor-Saving* Concrete Forms for every Purpose

For Concrete Construction...

SOLVAY Calcium Chloride STEPS UP COLD WEATHER SCHEDULES — REDUCES COST



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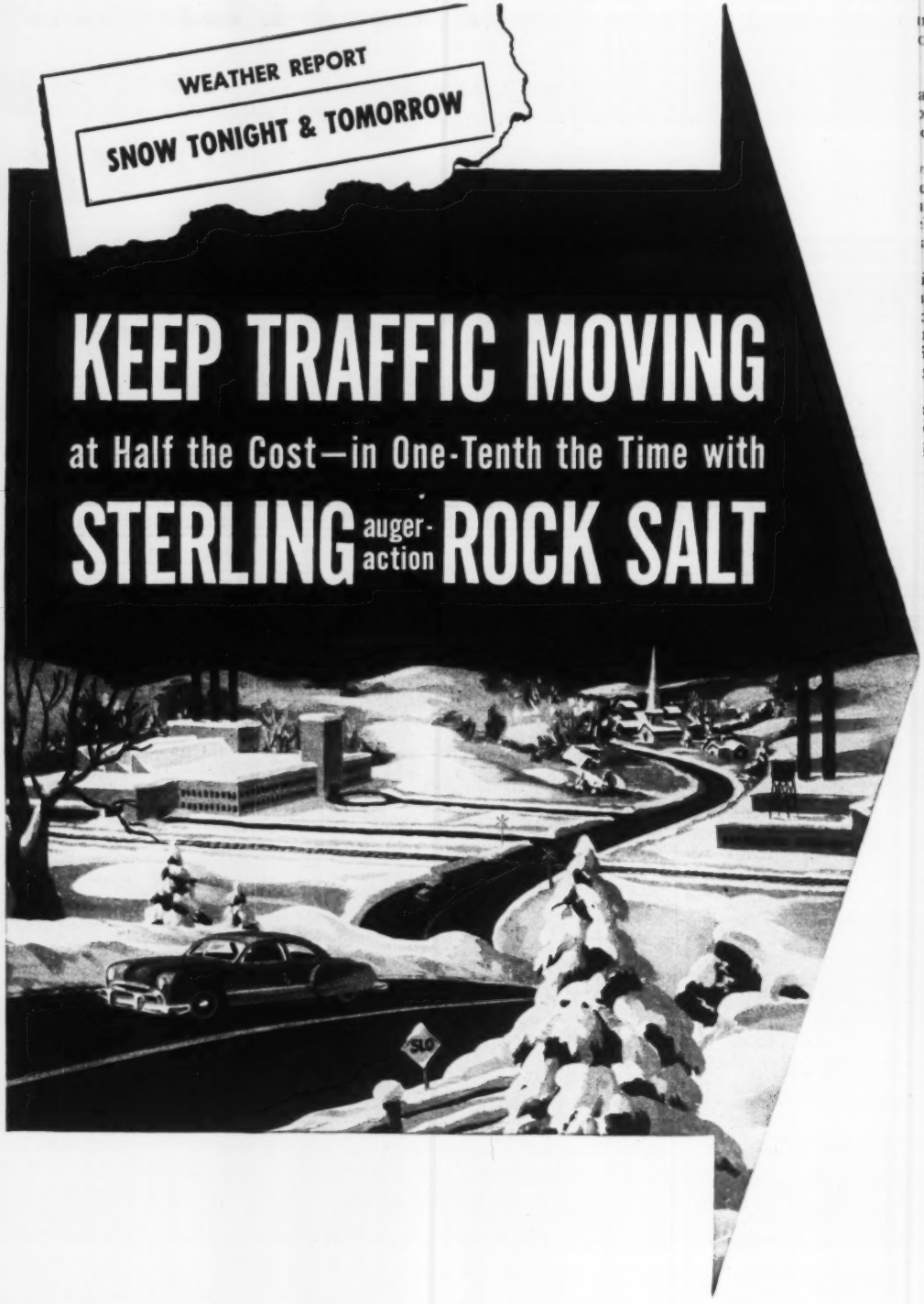
WEATHER REPORT
SNOW TONIGHT & TOMORROW
KEEP TRAFFIC MOVING
at Half the Cost—in One-Tenth the Time with
STERLING auger-action ROCK SALT
SLO

How one snow-belt county saved time and money with Sterling AUGER-ACTION Rock Salt

Comparative costs of protecting icy highways with treated sand and rock salt

SAND MIXED WITH ROCK SALT:

Royalty	$ .10
Loading	.25
Haul, 5 miles at 8¢	.40
Piling with bulldozer	.15
Treating with salt at 50 lbs. per cu. yd.	.48
Reloading at time of storm	.25
Average haul, 10 miles at 8¢	.80
Spread	.10
Total cost per cu. yd.	**$ 2.53**
Use of 3 cu. yd. per mile at $2.53	**7.59**

STRAIGHT ROCK SALT:

CC Grade Rock Salt: (400 lb. per mile, computed for 5-ton load)

5 tons of bulk salt at $12.95 per ton	$64.75
Loading, 5 tons at 25¢ per ton	1.25
Average haul (30 miles at 8¢ per ton-mile) 5 tons	12.00
Spread (mechanical) 5 tons at $1.00	5.00
	$83.00
$83.00/5 ton ..... per ton =	**16.60**
$83.00/25 miles ..... per mile =	**3.32**

UNIT SAVINGS:

$7.59 cost per mile with treated sand

$3.32 cost per mile with Sterling Rock Salt

$4.27 SAVING PER MILE EACH ICING IN FAVOR OF ROCK SALT

Mileage of state highways = 216 miles

ESTIMATED SAVING EACH STORM =

216 x $4.27 ..... $922.32

A BARE Pavement is the only SAFE Pavement!

And Sterling Auger-Action Rock Salt gives you "bare" pavements. For each coarse rock salt crystal bores through ice and snow right down to the pavement. Here it becomes brine. And this brine spreads out and breaks the bond between the road surface and the ice. Heavy traffic spots treated with coarse Sterling Auger-Action Rock Salt clear themselves with the passage of vehicles. Less traveled areas can be cleared with one pass of the plow or scraper.

Result: at far less cost, in far less time—you get *bare* pavements—the *only* safe pavements.

Get Ready for a Safer Winter

Comes in carloads, bulk, or 100-lb. bags. *Order NOW!*

STERLING AUGER-ACTION ROCK SALT

INTERNATIONAL SALT COMPANY, INC., SCRANTON 3, PA.

CONSTRUCTION REPORTS

Bids Asked—Low Bidders—Contracts Awarded

Compiled by Business News Department—Engineering News-Record, 330 W. 42nd St., New York 18, N. Y.

ELSIE EAVES, Manager — *J. A. MAHONEY, Reports* — *M. R. ROESSLER, Statistics*

NEW ENGLAND

BIDS ASKED—HEAVY CONSTRUCTION

R. I. Jamestown—B.A. 9/24—Town, Sewer Comn., Town Hall, sewerage disposal sys. Plans deposit $25. CD 8/19.

BIDS ASKED—BUILDINGS

Mass., Boston—HOSPITAL—B.A. 9/28—State, Dpt. Pub. Health, State House. P-H 8 chronic disease hospital and nurses home, Morton St., Morest Hills. Plans deposit $100, refundable. Extended date. CD 8/17.

HEAVY CONSTRUCTION

LOW BIDS FOR CONTRACTS

NEW HAMPSHIRE—State Dpt. P. Wks & Hys., Concord.

R. G. Watkins & Son, Mill Yard, Amesbury, Mass., LB. $89,838. Grading, drainage, road mix pavement 0.52 mi. U. S. 3 in town of Boscawen. Bids Aug 30. CD 8/23.

MASSACHUSETTS—Commonwealth of Mass., Dpt. Pub. Wks., 100 Nashua St., Boston.

The Savin Constr. Co., 10 Village St., East Hartford, Conn. LB $664,692. auto Rte. 128 exten., Beverly, Essex Co.

Ralph Civitarese Constr. Corp., 39 Providence St., Hyde Park, Mass. LB $171,588. Contr. 17, sewers, appurtenances, WEYMOUTH, MASS. Town, Sewer Dpt., 402 Essex St., Weymouth, Mass. Bids Aug. 27. CD 8/15.

Walter Reed Corp., 1078 Boylston St., Boston, Mass. LB $83,999. est. $96,000. hy. work, Brookline, Middlesex Co. Bids Aug. 28. CD 8/15.

▲ **C. L. Guild Constr. Co. Inc.,** 94 Water St., East Providence, R. I., LB. $1,189,505, sewer constr., approx. 12 mi. constr. in Riverside Sect., EAST PROVIDENCE, R. I. Town, Sewer Comrs. Office, Town Hall, East Providence, R. I.

Drake & Townsend, 11 W. 42 St., New York, N. Y., CA. $90,000. fuel storage tank and fdn., Allens Ave. Fields Point, PROVIDENCE, R. I. Providence Gas Co., Weybosset St., Providence, R. I.

BUILDINGS

LOW BIDS AND CONTRACTS

Walsh Bros., 150 Hampshire St., Cambridge, Mass. CA $300,000. CONVENT, BELMONT (BR. BOSTON), MASS. St. Luke's c/o Archdiocese Boston Chancery Office. 1 Lake St., Brighton, Mass. Maurice P. Meade. 24 School St., Boston, Mass., archt.

Henry E. Wile Co., 862 Walnut St., Newton, Mass. LB $400,000. convalescent HOME, 1135 Morton St., DORCHESTER, MASS. Trustees of Frank Wood Will, 14 State St., Boston, Mass. Bids Aug. 18. CD 8/8.

Anthony E. Arcese. 56 Central Ave., Newton, Mass. CA $440,000. 36 HOMES, LANCASTER, MASS. Massachusetts Development Corp., Pearl St., Worcester, Mass. David J. Abrahams & Assoc., 651 Boylston St., Boston, Mass., archts.

▲ **Penker Constr. Co.,** 1030 Summer St., Cincinnati, O. CA $3,000,000. mfg. PLANT addn., SPRINGFIELD, MASS. Monsanto Chemical Co., 812 Monsanto Ave., Springfield, Mass. Gilbert Small & Co., Inc. 10 State St., Boston, Mass., enrs.

J. W. Richie Co., 109 Foster St., Worcester, Mass. LB $390,000. reconstr. West College DORMITORY, WILLIAMSTOWN, MASS. Williams College, Williamstown, Mass. Bids Aug. 27. CD 8/17.

MIDDLE ATLANTIC

BIDS ASKED—HEAVY CONSTRUCTION

N. Y. Brooklyn—B.A. 9/18—President Brooklyn Boro, Boro Hall, Zone 2, grading, paving, construct utilities, and grade separation, incl. bridge at Fulton St., in Brooklyn-Queens Connecting Hy. from Middagh to Main Sts., Sects. A and B of Contr. 5. Plans deposit $10. CD 8/31/45.

BIDS ASKED—BUILDINGS

† **Md., Aberdeen Proving Ground**—SHOP—B.A. 9/11—U. S. Engr., 24 St. and Maryland Ave., P. O. Box 1715, Baltimore, Zone 3, artillery and fire control shop, Aberdeen Proving Ground, CIVENG 18-202-52-1. $700,000. J. L. Faisant & Assoc., 21 W. 25 St., Baltimore, engrs., Ross Walton & Hofstetter, 2111 N. Charles St., Baltimore, assoc. archts. CD 7/17.

N. J., Bordentown—TREATMENT, etc.—B.A. 10/2—general work, plumbing, heating and ventilating, electric and prison equipment for treatment and cell block wing at New Jersey Reformatory. Plans deposit $25; adv. ENR 9/13.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ **NEW YORK**—Bureau Contracts & Accounts, The Governor Alfred E. Smith State Office Bldg., Albany. Good Roads Engr. & Constr. Co. inc., Burns Ave., Wantagh N. Y., LB $125,962. est. $142,000. 2.19 mi. Bridgehampton-Devon, Pt. 1, S. H. 1495, FA. RC 51-65, Suffolk Co.,

Rusciano & Son Corp., 728 E. 212 St., New York, N. Y. LB $749,691. est. $755,000. 0.53 mi. Bronx River Parkway (southerly extens.) FA. BRP. 51-3. Bronx and Westchester Counties;

Rhodes Const. Co. Inc., 833 Front Ave., Saiamanca, N. Y. LB. $253,914, 5.52 mi. Napoli-New Albion County Rd. 10, FA. SS. 51-16, Cattaraugus Co.;

Torrington Constr. Co. Inc., P. O. Box 336, Torrington, Conn. LB. $387,467. est. $472,000. 6.9 mi. Otego-Oneonta (county road). FA. SS. 51-20, Otsego Co.; **Maxim Kranz,** 447 Ft. Washington Ave., New York, N. Y. LB. $145,970. est. $146,000. 2.6 mi. Horseheads-Montour Falls, S. H. 5208. FA. RC. 51-64. Chemung Co.

Law Bros Co., Herkimer, N. Y. LB. $688,747. est. $689,000. 6.77 mi. Watertown Rd. (Rte. 12 to Pearl St. Rd.) grade separation structure over New York Central R. R., FA. SS. 51-12, FA. SG. 51-13, Jefferson Co.

Lancaster Development, Inc., 32 Central Ave., Lancaster, N. Y., LB. $169,472. est. $200,000. 3.78 mi. York-Allegany County Rd. 119, FA. SS. 51-21, Chautauqua Co.;

The Callanan Road Improvt. Co., South Bethlehem, N. Y. LB. $505,915. est. $506,000. 8.6 mi. Preston Hollow-Medusa-South Westerlo, FA. SS. 51-9, Albany Co.; received no bids Aug 29, 0.95 mi. Corfu-Batavia S. H. 8283, Batavia City; Pearl St., FA. C. 51-4. FA. RC. 51-37. Genesee Co. Bids Aug 29. CD 8/10.

▲ **NEW JERSEY**—State Hy. Dpt., 1035 Parkway Ave., Trenton.

Franklin Contg Co., 12 Central Ave., Newark, N. J., LB $1,008,029, superstructure of viaduct over South Ave. Staten Island Rapid Transit Railway Co., Central R.R. of N. J. and North Ave., Route 4 Parkway, Sect. 7C Cranford Twp., Union Co. Bids Aug. 30. CD 8/11.

NEW JERSEY—State Hy. Dpt., State Hy. Office Bldg., Trenton.

South Jersey Constr. Co., 207 Adams St., Riverside, N. J. LB, $228,742, wid'n., ramps 0.371 mi. Route S-41, Route 25 (Sect. 9A) from Pennsauken Creek to Haddonfield Rd., Cinnaminson Twp., Burlington Co., Pensauken Twp. Camden Co., Proj. U-69 (16).

Nesto Constr. Co., 100 Riverside Ave., Newark, N. J. LB, $406,967, 0.742 mi. Bloomfield Ave. from Broadway to Lake St., Fed. Aid Secondary Proj., Newark, Essex Co. Bids Aug. 28. CD 8/10.

State Hy. Dpt., 1035 Parkway Ave., Trenton, N. J. rejected bids July 17, furnishing, installing motor truck scales at two locations Route 29 at North Bridge St. Somerville and Route 25 near Green St. Woodbridge Twp., Middlesex and Somerset Counties, NEW JERSEY. CD 8/24, under LB.

Quist Constr. Co., Inc., 8410 3 Ave., Brooklyn, N. Y. CA $288,745., Type III, dock, outlet chamber and dredging of pollution abatement proj., LINDEN, N. J. Linden Roselle Sewerage Auth., Council Chambers; City Hall, Linden, N. J. Bids June 27. CD 5/8.

PENNSYLVANIA—State Hy. Dpt., 506 N. Office Bldg., Harrisburg.

New Enterprise Stone & Lime Co., Inc., New Enterprise, Pa., LB. $124,144. two I-beam bridges over Clover Creek and 3,949 ft. roadway with crushed aggregate base and bit. surf. L.R. 07051 (1-2), Blair Co., LB. $30,388, I-beam bridge over Dunning Creek and 2,397 ft. roadway of crushed aggregate base with bit. surf. L.R. 222, Spur A(1), Bedford Co.

DePue & Diehl, R.D. 3, Tamaqua, Pa., LB., $102,169, I-beam bridge over Tulpehocken Creek and 841 ft. crushed aggregate base with bit. surf. L. R. 06149 (2), Berks Co.

Paul T. Britton, Inc., P. O. Box 27, Linesville, Pa., LB. $68,984. I-beam bridge and 1,935 ft. roadway with crushed aggregate base and bit. surf. L.R. 61004 (1-B), Warren Co.

B. B. Const. Co., Philipsburg, Pa., LB. $79,498, two I-beam bridges over White Corners Creek and Judson Run and 338 ft. roadway with crushed aggregate base and bit. surf. T. R. 49, Potter Co. Bids Aug. 31. CD 8/10.

▲ **PENNSYLVANIA**—State Hy. Dpt., 506 N. Office Bldg., Harrisburg.

Putnam & Greene, Inc., P. O. Box 512, Station A, Fort Wayne, Ind., LB. $212,324, crushed aggregate base and bit. surf. 12.359 ft., T.R. 253, 865, Cambria Co.

Donald B. Stabler, 635 Lucknow Lane, Harrisburg, Pa., LB. $646,107, wid'n. 41,361 ft. roadway with crushed aggregate base and bit. surf. new and existing base T.R. 322. Centre Co.

Paul Kebert, Meadville, R. D. 6, Pa., LB. $99,835, wid'n. 3,621 ft. roadway with crushed aggregate base and bit. surf. new and existing pavement T.R. 8, U.S. 6, Erie Co.

The Kelley & Myer Co., 1211 Gibson St., Youngstown, O., LB. $116,335, wid'n. 11,604 ft. roadway with granulated slag or crushed aggregate base and bit. surf. new and existing base, Law ence Co.

Indiana Contg. Co., N. 6 St., Indiana, Pa., LB. $959,-941. re n.-con. pavement and structures. 15,310 ft. T. R. 66, Armstrong Co. Bids Aug. 31. CD 8/10.

PENNSYLVANIA—State Hy. Dpt., N. Office Bldg., Harrisburg,

Allegheny Asphalt & Paving Co. Inc., 801 Bingham St., Pittsburgh Zone 3, Pa., CA $511,359. wid'n. 5.07 mi. existing pavement between North Warren and Sugar Grove from 16 to 20 ft., roadway and bit. surf. new and existing pavement; construct re n.-con. structure and three I-beam bridges over Jackson Run, T. R. 69, Conewago and Farmington Twps., Warren Co. Bids Aug. 17. Awarded Aug. 29. CD 8/22. under LB.

† **Golder Const. Co.,** Market St. Natl. Bank, Phila., Pa., LB. $774,358. est. $800,000. install ng complete jet fuel storage Greater Pittsburgh Airports, Moon Twp., Near Coraopolis, PITTSBURGH, PA. U. S. Eng., 121 N. Broad St., Phila. 1, Pa.

Kean Wise Co., Sewickley, Pa., LB. $328,015. est. $350,-000. paving, draining, East parking lot, Greater Pittsburgh Airport, PITTSBURGH, PA., Allegheny Co. Bd. Comrs., County Office, Pittsburgh, Pa.

Brothers Constr. Co., 1225 Carlton St., Phila., Pa. LB. $59,805. general constr. two fire towers, Old Annex, Main dormitory, for West Chester State Teachers College, WEST CHESTER, PA. General State Auth., 18 and Herr Sts., Harrisburg, Pa. Bids Aug. 29. CD 8/7.

MARYLAND—State Rds. Comn., 108 E. Lexington St., Baltimore, Zone 2.

F. P. Asher Jr. & Sons, Inc., West Extension, Annapolis, Md. LB $346,123. Alternate 1, resh ng, grading, existing fills and cuts 1.11 mi. be ing distance of 1,800 ft., drainage facilities throughout pavine on west approach beginning just west of Log Inn Rd., exten. eastward, parrallel to Rte. 50 to Chesapeake Bay Bridge, Contr. CBB 6-2-87.

John D. Sheetz Constr. Co., Halethorpe, Md. LB $184,153. Alternate 2, constr. wharf facilities for small boats and placing stone riprap around west abutment, grav. stone riprap around bents 13 to 29 inclusive, Chesapeake Bay Bridge, Contr. CBB 6-2-87, Anne Arundel Co. Bids Aug. 21. CD 8/13.

Inter-County Constr. Corp., 4720 Baltimore Aves., Hyattsville, Md. LB $216,547. Contr. 3, water and sewer exten., 27,000 ft. c.i. 6 to 16 in. mech. joint water mains, 42 hydrants, 17,000 ft 8 to 15 in. vitr. clay pipe, ANNAPOLIS, MD. City, Municipal Bldg., Annapolis, Md. Whitman, Requardt & Assoc., 1304 St. Paul St., Baltimore 2, Md., engrs.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **Brown & Matthews, Inc.,** 122 E. 42 St., New York, N. Y. CA. Approx. $3,800,000. 1 story 280 sq. ft. electronic parts PLANT, 2 story 100-100 ft. office, Old Country Rd. for Arma Corp., MINEOLA, N. Y. Roosevelt Field, Inc., c/o Webb & Knapp, Inc., 270 Park Ave., New York, N. Y. Alexander D. Crosett, 27 William St., New York, N. Y. engr. and archt.

McCloskey & Co., 1620 W. Thompson St., Phila. 21, Pa., LB. $869,500. general constr. HIGH SCHOOL addns. for Nether Providence Twp. School Dist.,

PROJECTS COVERED

Projects—By Size

Construction projects here reported cover the United States and Canada, are of these minimum sizes or larger: water supply, earthwork, waterways $34,000; other public works $60,00; industrial buildings $82,000; other buildings $300,000.

Classes of Construction

(Name in order of Listing)

Water Supply	Latin America
Sewers, Waste Disposal	Public Buildings
Bridges	Commercial Buildings
Streets & Roads	Industrial Buildings
Earthwork, Waterways	Unclassified

Stages Reported

PROPOSED WORK: Including appointment of engineers or architects.

BIDS ASKED (new announcements only). For full calendar, see also preceding issues of ENR.

LOW BIDDERS: On jobs below $500,000 value all low bidder news will be the final reports published on the projects involved except where award is not made to the low bidder. In this case, a supplementary contract award report will be published.

CONTRACTS AWARDED: Except awards to low bidders previously reported in low bidder stage.

Dates shown are of issue in which last previous report was published.

Symbols and Abbreviations Include:

†	Federal Government
▲	Project of $1,000,000 or over.
B.A.	Bids Asked
ENR	Engineering News-Record
CD	Engineering News-Record Construction Daily

WALLINGFORD, PA. State Public School Bldg. Auth., 1400 N. Cameron St., Harrisburg, Pa., Bids Aug. 30. CD 8/3.

chor Constr. Corp., 6 W. 23 St., Baltimore 18, Md. CA $350,000. 100x320 ft. masonry WAREHOUSE, BALTIMORE, MD. Industrial Container Corp. of Maryland, 8645 Pulaski Hy., Baltimore, Md.

SOUTH

BIDS ASKED—HEAVY CONSTRUCTION

ss., Jackson—B.A. 9/19—City, c/o city engr., City Hall, Proj. 128.5, sanitary sewers. Plans deposit $10. CD 8/11/50.

N. C., Fort Bragg—SEEDING RUNWAY OVERRUNS—B.A. About 9/20—U. S. Eng., 308 Customhouse, Wilmington, seeding runway overruns at Pipe Air Force Base, Eng 31-075-52-8.

La., Lake Charles—RELOCATION RAILROAD—B.A. 9/20—U. S. Eng., 606 Santa Fe Bldg., Galveston, Tex., relocation Missouri-Pacific Railroad, Lake Charles Air Force Base, Eng. 41-243-52-27. CD 3/28.

Fla., Orlando—FACILITIES—B.A. About 9/21—U. S. Eng., P.O. Box 4970, Jacksonville, ATO storage facilities, Pinecastle Air Force Base, Serial No. Eng. 08-123-52-39. CD 1/31.

y., Louisville—B.A. 9/24—Louisville Water Co., 435 S. 3 St., Contr. A, pipe and fittings; Contr. B, valves. Plans deposit $15, E. B. Payne, c/o owner, ch. engr.

Fla., Cocoa—RUNWAY—B.A. 9/25—U. S. Eng., P.O. Box 4970, Jacksonville, runway, taxiways and apron paving Air Force Missile Test Center, Patrick Air Force Base, Eng. 08-123-52-36. Extended date. CD 8/29.

Ala., Mobile—FIRE PROTECTION—B.A. 9/26—U. S. Eng., Post Office Bldg., automatic fire protection for file bldg. for engineers, Eng. 01-076-52-19. Plans deposit $5.

a., Vidalia—B.A. 9/26—Concordia Parish Police Jury, rein.-con., corrugated metal pipe floodgate, earth channels, etc. in Sect. 14. CD 6/26/50.

Va., Harrisburg—B.A. 9/26—City, sewage treatment plant. Plans deposit $25. R. Stuart Royer & Assoc., 401 Virginia Bldg., Richmond, engrs. CD 11/2/50.

† Fla., Cocoa—BASE ROADS, etc.—B.A. About 9/27—U. S. Eng., P.O. Box 4970, Jacksonville, base roads and parking areas, Air Force Missile Test Center, Patrick Air Force Base, Serial No. Eng 08-123-52-33. CD 4/4.

† Louisiana—B.A. 10/16—U. S. Eng., foot of Prytania St., New Orleans, Zone 9, construct Bayou Boeuf Locks, approx. 300,000 cu. yd. earthwork, etc., St. Mary Parish; adv. ENR 9/13. CD 2/26/46.

BIDS ASKED—BUILDINGS

N. C., Marion—SCHOOL—B.A. 10/2—City, Marion, Consolidated Negro School. Plans deposit $50. Lindsey M. Gudger, 52 Carter St., Asheville, archt.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

Town, Orange, Va., rejected bids Aug. 15, water reservoir, L.B. $97,300. ORANGE, VA. CD 830.

NORTH CAROLINA—State Hy. and Pub. Wks. Comn., Raleigh, low bidder refused contract for grading 6.56 mi. from point on U.S. 19 and 23 approx. 3.5 mi. northeast of Waynesville east through Clyde to point on U.S. 19 and 23 inside city limits of Canton, Proj. 9443, Haywood Co. Bids Apr. 24. Will readvertise. CD 4/30, under LB.

▲ NORTH CAROLINA—State Hy. and Pub. Wks., Comn., Raleigh,

McMeekin Constr. Co., Cheraw, S. C., L. B. $690,926. est. $400,000-$500,000. structures, Proj. 3-214, Bladen Co.

F. A. Triplett, Inc., Chester, S. C., L. B. $89,234, structures, Proj. 4611, Orange Co.

Columbus Contractors, Inc., Whiteville, N. C., L. B. $146,149. est. $150,000-$175,000, structures, Proj. 5287, Davidson Co.

Dickerson, Inc., Box 448, Monroe, N. C., L. B. $76,184. est. $75,000-$100,000. structures, Proj. 9053, S-246 (2), S-397 (3), Buncombe Co.; L. B. $69,975. est. $50,000-$75,000. structures, U.S. 19 land 23, Proj. 9086, U-661 (5), Buncombe Co. Bids Aug. 28. CD 8/23.

▲ NORTH CAROLINA—State Hy. and Pub. Wks. Comn., Raleigh,

Dickerson, Inc., Box 448, Monroe, N. C., LB. $107,194. est. $75,000-$100,000. grading, subgrade reinf. 9.95 mi. Proj. No. 1.701, S-484 (1), S-476 (1), Perquimans Co.; LB. $130,596. est. $125,000-$150,000. STBC, bit. surf. tr. or sand asph. or b. conc. surf. 11.67 mi. Proj. 4-9-36-230, Johnston Co.

A. B. Burton Co. Inc., Box 817, Lynchburg, Va., LB. $181,412. est. $150,000-$175,000 grading, structures, 4.13 mi. Proj. 4611, Orange Co.

Grannis & Sloan, Fayetteville, N. C., LB. $219,932. est. $225,000-$250,000, grading 7.465 mi. Proj. 5287, Davidson Co.

Ray D. Lowder, Inc., Albemarle, N. C., LB. $117,335. est. $100,000-$125,000. grading, traffic bound macad., bit. surf. tr. 1.71 mi. U. S. 21, Proj. 6537, Mecklenburg, Co.

W. E. Graham & Sons, Cleveland, N. C., LB $242,619. est. $225,000-$250,000. grading 5.74 mi., Proj. 7635, F 490 (3). Surry Co.; L.B. $2,301,093. est. $400,000-$500,000. grading, 6.15 mi. Proj. 8521, Buncombe and McDowell Counties.

Taylor Const. Co., Ashville, N. C., LB. $287,842. est. $300,000-$400,000. grading, traffic bound macad.,

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bit. surf. tr. 7.68 mi. N. C. 63, Proj. 9053 S-246 (2) and S-397 (3), Buncombe Co.; L.B. $374,678, grad'ng 6.56 mi. Proj. 9443, F-16 (8), Haywood Co.

White Const. Co., Kinston, N. C., LB. $110,359, est. $100,000-$125,00, sand asph. or b. conc. surf. 15.15 m. Proj. 2-9-24-244.

Barnhill & Long, Tarboro, N. C., LB. $87,821, grading, and structures 7.79 mi. Proj. 1-401, S-459 (1), Gates Co.

Towles-Cline Constr. Co., Box 1617, Wilmington, N. C., LB. $67,891, est. $50,000-$75,000, sand asph. or b. conc. surf. 12.9 mi. Proj. 3-9-28-234, Brunswick Co.

Ben B. Propst, Box 526, Concord, N. C., L.B. $65,800, bit. surf. tr. 18.8 mi. Proj. 6-9-57-235, Robeson Co. Bids Aug. 28. CD 8/23.

R. H. Bouligny Constr. Co., 433 W. Morehead St., Charlotte, N. C., CA. $399,821, 242 mi. rural distr. lines Pitt, Craven and Beaufort Counties, NORTH CAROLINA. Greenville Utilities Comn., Martin Swartz, supt., Greenville, N. C. CD 11/24/50.

Blythe Bros. Co. Inc., 2911 Hutchinson Ave., Charlotte, N. C. LB. $223,783, street imprvs., CHARLOTTE, N. C. City, Charlotte, N. C. Bids Aug. 28. CD 8/23.

P. S. West Const. Co., Statesville, N. C., LB. $222,200, swimming pool, playground, recreation bldg. etc. DREXEL, N. C. Drexel Foundation, Inc., Drexel, N. C. Bids Aug. 22. CD 8/7.

Glamorgan Pipe & Foundry Co., Lynchburg, Va., L.B. $162,951. Cont. 1, c.i. pipe and fittings. REIDSVILLE, N. C. City, Reidsville, N. C. Bids Aug. 21. CD 7/25.

McDougald-Warren, Inc., 1650 Northside Dr. N.W., Atlanta, Ga., LB. $71,230, resurfacing Marietta St., ATLANTA, GA. City, City Hall, Atlanta, Ga. Bids Aug. 28. CD 4/25/46.

Hodgson Inc., 732 Monroe St., Montgomery, Ala., CA $100,607, paving 17 streets, MONTGOMERY, ALA. City, City Hall, Montgomery, Ala. Bids Aug. 21. CD 8/8.

W. & S. Constr. Co., Deposit Guaranty Bank Bldg., Jackson, Miss., $62,830. Contr. 1, WW imprvs.***American Cast Iron Co., 2424 Myrtle St., Dallas, Tex. CA $100,283, Contr. 4, c.i. pipe fittings, valves, valve boxes and hydrants***Spencer Brothers, 717-719 Maple St., Natchez, Miss., CA $141,022, Div. 1, general contract, incl. all structures, outside pipe work electric lighting, heating, etc.***E. W. Bacharach & Co., Rialto Bldg., Kansas City, Mo. CA $149,000, Div. 2, filters, mechanical equip. incl. power wiring and switchboard installation, NATCHEZ, MISS. City, Mayor and Bd. Aldermen, City Hall, Natchez, Miss. Grand total $453,135. Bids Aug. 14. CD 7/18.

▲ **G. L. Tarlton Contg. Co.**, West Park at Manchester, St. Louis, Mo. CA $615,932. Contr. 1, 9 mi. 24 in. trunk and outfall sanitary sewers, 590 ft. tunnel work; CA $293,032, Contr. 5, 8 mi. sizes up to 24 in. trunk and lateral sanitary sewers, incl. 2 steel trussed spans, sundry small spans on concrete piers, manholes, etc.***Sullivan, Long & Hagerty, 800 Fourth Ave. N., Birmingham, Ala., CA $201,614, Contr. 2, 8 mi. sizes up to 12 in. lateral sewers, lift station, 850 ft. 8 in. c.i. force main; CA $66,195, Contr. 3, 1¼ mi. 8- to 15-in. vit. clay pipe, trunk sanitary sewers, 16 in. c.i. pipe in conduit; CA $294,213. Contr. 4, 11.5 mi. sizes up to 19 in. lateral sewers 2 lift stations, 3,269 ft. 4 in. c.i. force main. NATCHEZ, MISS. City, Mayor and Bd. Aldermen, City Hall, Natchez, Miss. Grand total $1,470,986. Bids Aug. 14. CD 7/18.

KENTUCKY—State Hy. Dpt., Frankfort, rejected bids July 27, reconstr. local bank or creek gravs. 6.967 mi. Combined "S" 42-38, 42-78, 42-58, 53-549, Graves and Hickman Counties. LB $147,750. CD 8/7 under LB.

Thos. D. Nolan Co., Shepherdsville, Ky. CA $156,786. Contr. 139, Peachtree St. sewer, Sec. B, LOUISVILLE, KY., and Jefferson Co. Metropolitan Sewer Dist., 414 W. Jefferson St., Louisville, Ky. L. S. Vance engr. Bids Aug. 21. CD 4/22/48.

TENNESSEE—State Hy. Dpt., Memorial Bldg., Nashville, rejected bids Aug. 17. Proj. F 060-1-(2), Hamilton Co. LB. $119,716. CD 7/30.

L. O. Brayton & Co., Brayton, Tenn., LB. $193,735, water supply imprvs. GALLATIN, TENN. City, Gallatin, Tenn. Bids Aug. 23. CD 8/9.

G. & W. Constr. Co., 151 N. 1st St., Nashville, Tenn., CA. $113,000, WW sys. tank, etc. LORETTO, TENN. City, Loretto, Tenn. Bids July 6. CD 6/29.

Southern States Paving Co., 900 44 Ave. N., Interstate Paving Co., 3rd Natl. Bank Bldg., **Warren Bros. Road Co.**, 1209 N. 1st St. and **Eller & Allen**, 1204 Ave. N., all of Nashville, Tenn. CA. $991,000, resurf. 120 mi. county roads, NASHVILLE, TENN. Davidson Co., Nashville, Tenn. CD 3/23/44.

Wright Contrg. Co., 504 25 Ave., Columbus, Ga. CA. $616,706, sanitary sewers, SHELBYVILLE, TENN. City, Shelbyville, Tenn. Bids Aug. 22. CD 8/29, under LB.

BUILDINGS

LOW BIDS AND CONTRACTS

J. A. Jones Constr. Co., 209 W. 4 St., Charlotte, N. C., LB. $601,600, tuberculosis HOSPITAL, CHAPEL HILL, N. C. State Sanatorium for Treatment of Tuberculosis, McCain, N. C., Bids Aug. 28. CD 8/9.

▲ **Wm. Muirhead Const. Co.**, Box 2012, Durham, N. C., CA. $1,479,550. HOSPITAL alterations, addns., DURHAM, N. C. Watts Hospital, Scoville Wannamaker, chn. Durham, N. C. Bids July 24. CD 7/30, under LB.

Daniel Constr. Co., 429 N. Main St., Greenville, S. C., L.B. $497,745. sub-structure of steam GENERATING PLANT, SOUTH CAROLINA. South Carolina Public Service Auth., Moncks Corner, S. C. Bids Aug. 27. CD 8/13.

▲ **Pittsburgh Lectromelt Furnace Corp.**, Foot 32 St., Pittsburgh, Pa. CA $1,500,000. furnace on 20 acre tract ATLANTA, GA. Atlantic Steel Co., Mecaslin St. N. W., Atlanta, Ga. CD 1/4.

▲ **North Atlantic Contractors, Inc.**, 859 Biscayne St., Miami Beach, Fla., CA, $1,300,000 HOTEL, MIAMI BEACH, FLA. Ocean Front Hotel, Inc., c/o contractor. CD 7/25, under CA.

▲ **F. T. H. Pearce & Co.**, Edgewood Circle, Columbia, Ga., CA. $1,883,476, RANGE Bldg. etc. at Redstone Arsenal HUNTSVILLE, ALA. U. S. Eng., P.O. Box 1169, Mobile, 7, Ala. Bids Aug. 9. CD 8/29, under LB.

Gravier & Harper, P.O. Box 1392, Alexandria, La. LB. $220,940 POWER PLANT addn., ALEXANDRIA, LA. City, Alexandria, La. Bids Aug. 27. CD 8/16.

Boh Bros. Constr. Co., 2400 Cypress St., New Orleans, La. LB $135,521. WAREHOUSE, NEW ORLEANS, LA. Curtain Development Co., c/o B. M. Donblatt & Assoc., engrs., Carondelet Bldg., New Orleans, La. Bids Aug. 27. CD 8/20.

John L. Donahue, 46 Swallow St., New Orleans, La. Owner Builds. $300,000. RESIDENTIAL development NEW ORLEANS, LA.

MIDDLE WEST

BIDS ASKED—HEAVY CONSTRUCTION

Ill., Chicago—RAILROAD RELOCATION—B.A. 9/25—City, City Hall, relocation of Chicago and North Western R.R. and Chicago, Milwaukee, St. Paul and Pacific R.R. tracks at O'Hare Field, Chicago International Airport Contract No. 7, Spec. 80.475-51.12.

† O., **Brecksville**—B.A. 10/2—Veterans Admin., Munitions Bldg. Wash. 25, D. C., drilling, testing one test well for addnl. water supply for Veterans Admin. Hospital. Spec. 51181. Proj. No. 34-5145.

Mich., **Bay City**—B.A. 10/4—City, City Purchasing Agent, City Hall, sewage treatment works incl. plant. Plans deposit $60; incinerating equip., 50,000 lin. ft. 15 to 54 in. intercepting sewers involving both tunnel and open cut constr. Plans deposit $50 each, river crossing and plant outfall tube, diversion and control chambers. Plans deposit $25 each. Francis Engineering Co., 301-305½ Eddy Bldg., Saginaw, engr. Extended date. CD 8/22.

Ill., **Tuscola**—B.A.—10/9—City, City Hall, imprv. sewer, exten. addnl. mains, $90,000. Paul J. Kleiser, Terre Haute, Ind., engr.

Ill., **Granite City**—S.A. 10/12—East Side Levee and Sanitary Dist. K. T. Ogle, pres., Bd. Trustees, 2502 McCasland Ave., East St. Louis and City, Granite City c/o mayor, Project 15 C, Section A and C, trunk and lateral sewers, etc. Bids 8/24, rejected, LB $100,000. CD 7/23.

BIDS ASKED—BUILDINGS

Wis., **Whitewater**—RESIDENCE HALL—B.A. 10/13—Bd. Regents, State College, Madison, residence hall, $330,000. Plans deposit $25, Boyum, Schubert & Sorenson, Moeschler Bldg., LaCrosse, archts. R. O. Kirchhoff, Madison, state archt. CD 7/25.

▲ Mich., **Lansing**—OFFICE—B.A. 10/17—State, A. N. Langlus, dir., State Bldg. Dpt., rebuild 6 story state office, incl. removal 2 top stories, $2,921,000, Smith, Hichman & Grylls, 800 Marquette Bldg., Detroit, archts. CD 4/12/44.

Ill., **Chicago**—FACTORY—Bids Asked—Ideal Furniture Mfg. Co., 92 and Green Sts., 1 story, 50,000 sq. ft. chrome furniture mfg. factory, $350,000, A. Epstein & Son Co., 2011 Pershing Rd., archts.

Wis., **Milwaukee**—FACTORY, etc.—Bids Asked—Rexfred Paper Co., 1715 Canal St., Zone 5, 1 story bonnet, 395x260x135 ft., steel, brick factory and office, $400,000. Lawrence Peterson & Assocs., 601 E. Ogden Ave., Milwaukee, Zone 2, engrs. CD 7/14/50.

SOON LETS CONTRACT—BUILDINGS

Ill., **Chicago**—PLANT—Chicago, Milwaukee, St. Paul & Pacific R.R., Union Depot, Chicago, Zone 6, soon lets contract, bldg. for car department on Western Ave. yards, $150,000.

▲ Ill., **Chicago**—HANGARS—Trans World Airlines, Inc., Municipal Airport, Kansas City, Mo., soon lets contract two 270 ft. spans, light concrete arch airplane hangars on Midway Field, $2,000,000. Ammann & Whitney, 76 9 Ave., New York, N. Y., archts. CD 7/23.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

INDIANA—State Hy. Comn., State House Annex, Indianapolis, Zone 4.

J. C. O'Connor & Sons Inc., 2104 Miner St., Fort Wayne, Ind., LB. $74,293, 3 spans 160 ft. long continuous steel beam bridge over Kankakee River, 1 mi. north of State Rd. No. 8, 0.055 mi. approach grading and compacted aggregate surf., Rural District, Starke and La Porte Counties.

Rieth-Riley Constr. Co., 311 W. Monroe St., Goshen, Ind., LB, $356,074, 221 ft. 3 spans continuous steel beam bridge over Iroquois River, 4 mi. north of U. S. Rd. 24, 02 mi. approach grading and c. conc. Rural District, Newton Co. rejected bids Aug. 28, 8 spans 556 ft. long, rein.-con. open spandrel arch bridge over Mill Creek, s. of Cutler, grading, bituminous compacted aggregate surf. 1.563 mi. south of Cutler, Owen Co. Bids Aug. 28. CD 8/10.

Bd. P. Wks., Mayor, City Hall, Bloomington, Ind., rejected bids Aug. 10, waterworks improvs., filtration plant addns., improvs., standpipe, watermains, earthdam and spillway across Griffey Creek, BLOOMINGTON, IND. CD 8/21, under LB.

Kuck & Hanson, 1112 W. Everett St., Lake Forest, Ill. CA $-2,000. storm sewers on estate, LAKE FOREST, ILL. Louis Swift Estate, Lake Forest, Ill. James Anderson Co., 290 E. Deerpath Rd., Lake Forest, Ill., engrs. Awarded Aug. 24.

Bahr Constr. Co., 2204 S. 10 St., Manitowoc, Wis. LB $67,363, sewers in W. Cecil St., NEENAH, WIS. City, Neenah, Wis. Wayne Bryan, Neenah, Wis., city engr. Bids Aug. 27. CD 9/6/50

Ann Arbor Constr. Co., 221 Felch St., Ann Arbor, Mich. CA $297,616. paving bit.-con. Miller, Fourth, Fifth, East University, South State, East Liberty, Ann, Washington, Catherine and Ashley Sts., ANN ARBOR, MICH. City Bd. Pub. Wks Ann Arbor Mich. Bids Aug 15 CD 8/10

Brighton & Wing, Birmingham, Mich. CA $141,812. drainage structures, etc., Detroit-Wayne Airport, Detroit, MICH. Detroit-Wayne Major Airport, Middlebelt and Expressway Sts., Detroit, Mich. CD 8/29.

City, Pub. Wks. Dpt., Lansing, Mich. Owner Builds. $95,000. resurf. SW/NE runway 4,200 ft. long with 7,000 plant mix, Capitol City Airport, LANSING, MICH. Glenn F. Manz, city engr.

BUILDINGS

LOW BIDS AND CONTRACTS

Comte Constr. Co., 912 Summit St., Toledo, O. general const.; **Gibboney Plumbing & Heating Co.**, 1430 Broadway, Toledo, O., plbg. and htg.; **Preiter Elec. Co.**, 340 Dorr St., Toledo, O., electric, LB, $486,193. est. $400,000. modernization Fort Miami SCHOOL;

Giant Lumber & Building Co., 1626 Ketcham St., Toledo, O. general constr.; **Gibboney Plbg. & Htg. Co.**, 1430 Broadway, Toledo, O., plbg. and heating; **Romanoff Elec. Co.**, 2012 N. 14 St., Toledo, O., elec., L.B. $-6,0-0. est. $250,000. replace center sect. of Union SCHOOL, modernize and add 7 classrooms, MAUMEE, O. Bd. Educ., Maumee, O. Bids Aug. 10. CD 8/10.

▲ **M. W. Kellogg Co.**, 225 Broadway, New York, N. Y., CA. Approx. $7,000,000. CATALYTIC CRACKING unit with 15,000 bbl. gas-oil capacity daily; polymerization unit at Toledo refinery, Bay Shore and Otter Creek Rd., TOLEDO, O. Pure Oil Co., 35 E. Wacker Dr., Chicago, Ill. Awarded Aug. 8. CD 5/23.

Bush & Son, 4204 S. Brook St., Louisville, Ky., CA, $-99,715, general contract, SCHOOL, CHARLESTOWN, Ind. Charlestown Twp., Charlestown, Ind. Bids Aug. 24, awarded Aug. 27. CD 8/20, under LB.

Rust Furnace Co., c/o Rust Engineering Co., 575 6 Ave., Pittsburgh, Pa. CA slab reheating FURNACE unit, INDIANA HARBOR, IND. Inland Steel Co., 385 Dearborn St., Chicago, Ill.

T. C. Bethel, Jacksonville, Ill., $94,580, general contract, Sect. 1, remodel bldg. for WAREHOUSE shop and office, ILLINOIS. Illinois Rural Electric Co., S. R. Faris, mgr., Winchester, Ill. Bids Aug. 14. CD 7/8/48, under Unclassified.

▲ **Ragner Benson, Inc.**, 4744 W. Rice St., Chicago 51, Ill. CA $2,000,000. 2 story, 200,000 sq. ft. waste paper processing FACTORY OFFICE and WAREHOUSE, CHICAGO, ILL. Pioneer Paper Stock Co., 448 W. Ohio St., Chicago 10, Ill. Bids June 6. CD 5/22.

Klinger & Hartney, Oak Park, Ill. CA $300,000. 2 story, FACTORY and OFFICE, CHICAGO, ILL. J. E. Siebel & Sons Co., 4025 W. Peterson Rd., Chicago, Ill. Meyer & Cook, Lincoln Ave., Chicago, Ill., archts. Awarded Aug. 27.

▲ **S. N. Nielson Co.**, 3059 Augusta Blvd., Chicago 22, Ill., LB, $2,659,000. APARTMENT at 60 Langley Cottage Grove Ave., CHICAGO, ILL. CHICAGO Dwellings Association, 69 W. Washington St., Chicago 3, Ill. Bids Aug. 16. CD 8/6.

Schlett Constr. Co., 709 Rogers St., Downers Grove, Ill., CA, $500,000, Junior HIGH SCHOOL, DOWNERS GROVE, ILL. School Dist. 58, Downers Grove, Ill. Bids Aug. 20, awarded Aug. 24. CD 8/28, under LB.

Sherman Olson, Inc., 600 W. Jackson St., Chicago, Ill., CA $453,500. 2 story 62x100 ft. OFFICE, JOLIET, ILL. Elgin, Joliet and Eastern Ry. Co., F. G. Campbell, ch. engr., East Joliet Yd., Joliet, Ill. Bids Aug. 13. CD 8/10.

Madison County Housing Auth., D. F. Braner, exec. dir. 3 and Haller Sts., East Alton, Ill., cancelled bids to have been opened Aug. 6, Project 15-3 incl. 13 buildings, 84-units, concrete, brick, frame, etc. $600,000 to $900,000 MADISON, ILL. Will re-advertise. CD 6/15.

Leslie Elson Co., 3265 W. Fullerton, Chicago, Ill., CA $325,000, elementary SCHOOL, ROCK FALLS, ILL. School Dist. 13 Rock Falls, Ill. Louis G. Kinnscott, 610 3 St., Sterling, Ill. archt. Awarded Aug. 20.

Power Constr. Co., 212 S. Marion St., Oak Park, Ill., LB, $450,000, Lincoln Grade School addn. at Lincoln Ave. and Harms St., SKOKIE, ILL. School Dist. 69, Skokie, Ill. Bids Aug. 21. CD 8/14.

▲ **Kaiser-Ducett Co.**, 53 W. Jackson St., Chicago 4, Ill., CA $1,000,000, 1 story 70,000 sq. ft. OFFICE, SKOKIE, ILL. All State Insurance Co., Cicero and Lincoln Sts., Skokie, Ill. Naess & Murphy, 80 E. Jackson St., Chicago 4, archts. Awarded Aug. 25. CD 8/28.

Korman Constr. Co., Sterling, Ill., CA, $531,800, general contract; northwest and Lincoln SCHOOLS, STERLING, ILL. School Dist., 124, Supt. of Schools, Sterling, Ill. Bids Aug. 14. CD 8/29, under LB.

Madison County Housing Auth., D. F. Braner, exec. dir. 3 and Heller Sts., East Alton, Ill., cancelled bids to have been opened Aug. 20, Project 15-9 incl. 12 bldgs., 50-units, brick, concrete, frame etc., $500,-000; Project 15-7, incl. 18 bldgs. 100-units, 1 story management and maintenance bldg. brick, concrete, frame, etc., $1,000,000. VENICE, ILL. Will re-advertise. CD 6/13.

Crucible Steel Co., 3264 Hubbard St., Detroit, Mich. Owner Builds. $300,000. 1 story, block, brick WAREHOUSE with OFFICE, 4920 Nevada St., DETROIT, MICH.

Edward Schindel Co., McCann St., Ecorse, Mich. CA $400,000. 2 story, bsmnt., brick, steel, concrete Otto H. Gerrish Elementary School, McCann St., ECORSE, MICH. Ecorse Twp., Ervin Friend, chn., School Bd., Ecorse, Mich. Bids July 10. CD 7/5.

Muskegon Constr. Co., 838 Jefferson Ups, Muskegon, Mich. CA $308,724. Brick, steel HOSPITAL addn., GRAND HAVEN, MICH. City, R. V. Terrill, city mgr., Grand Haven, Mich. Bids Aug. 14. CD 8/8.

Fireproof Homes, Inc., 19228 W. McNichols St., Detroit, Mich. CA $900,000. 100 single HOUSES, Land of Lakes Development, Middle Straits Lake, PONTIAC, MICH. Charles Schuett, Pontiac, Mich.

Time Home Builders, Inc., Cataldo Realty, 23500 Harper St., Detroit, Mich. Owner builds. $400,000. 45 frame HOUSES, Sunnydale near Harper, ST. CLAIR SHORES, MICH.

Arthur Vollmer Constr. Co., 222 N. Bates St., Saginaw, Mich. CA $525,486. brick, steel, concrete HOSPITAL, TAWAS CITY, MICH. Tawas City Hospital, Tawas City Hospital Assoc., Tawas City, Mich. Bids Aug. 2 CD 7/5.

WEST OF MISSISSIPPI

BIDS ASKED—HEAVY CONSTRUCTION

† **Missouri**—B.A. 9/18—U. S. Eng., 601 Davidson Bldg., Kansas City 8, Mo., approx. 554,800 cu. yd. earthwork emergency repairs to levees on left bank of Missouri River, Waverly to DeWitt Bends, CIVENG 23-028-52-38. CD 6/1/44.

† **Missouri**—B.A. 9/18—U. S. Eng., 601 Davidson Bldg., Kansas City 8, Mo., approx. 806,000 cu. yd. earth fill emergency repairs to levees on right bank of Missouri River, Waverly to DeWitt Bends, CIVENG 23-028-52-37. CD 6/1/44.

† **Missouri**—B.A. 9/18—U. S. Eng., 601 Davidson Bldg., Kansas City 8, Mo., approx. 457,000 cu. yd. earthwork, emergency repairs to levees on Grand and Charlton Rivers and left bank of Missouri River, DeWitt Bend to Rocheport Reach, CIVENG 23-028-52-51. CD 6/1/44.

Nebraska—RURAL DISTRIBUTION LINES—B.A. 9/18—McCook Public Power Dist., 305 Norris Ave., McCook, 14.7 mi. 69 kv. rural distr. lines on two-pole structure in Frontier Co., Proj. Neb. 79HKL Red Willow Sect. II.; 60.96 mi. rural distr. lines, 33.4 mi. conversions and 2.9 mi. line removal, Red Willow, Frontier, Hitchcock, Hayes and Lincoln Counties, Proj. Neb. 79 L and M Red Willow. Plans deposit $10 each. Philip L. Burns, 630 Davenport Bank Bldg., Davenport, Ia. consult. engr.

† **Nebraska, South Dakota, Iowa**—CATWALKS, LADDER SAFETY DEVICES—B.A. 9/18—U. S. Eng., 1709 Jackson St., Omaha, Neb., construct catwalks and ladder safety devices on radio towers at Pickstown, S. D., Sioux City, Ia., and Onawa, Ia., Omaha, Neb., Nebraska City, Neb. and Brownsville, Neb. Inv. 52-24.

South Dakota—B.A. 9/18—West Central Electric Cooperative Murdo, 710 mi. rural distr. lines, Haakon, Jackson, Jones and Stanley Counties, $900,000. Ulteig Eng. Corp. 1114½ Front St., Fargo, N. D., engrs. CD 1/5.

† **Tex., Amarillo**—FIRE ALARM SYS.—B.A. 9/18—U. S. Atomic Energy Comn., Los Alamos, N. M., fire alarm sys., with 20 manually operated fire alarm boxes, (on Standards) and 12 manually operated boxes with auxiliary attach for auto operated approx. 15,000 ft. conduit, 11,000 ft. underground master control cabinet for sys. control, Inv. 291-52-15. $50,-000-$100,000. Plans deposit $50. Silas Mason & Co., Pantex Plant, archts. CD 8/16.

Iowa-Missouri—RURAL DISTRIBUTION LINES—B.A. 9/19—Atchison-Holt Electric Co-operative, John Buck, pres., Rock Port, Mo., 70 mi. rural distr. lines in Fremont and Page Counties in Iowa and Holt and Nodaway Counties, Missouri, Proj. Missouri 128 Atchison. Plans deposit $10. Hennington, Durham & Richardson, Inc., 6262 Standard Oil Bldg., Omaha, 2, Nebr., engrs.

▲ **Minn., Albert Lea**—B.A. 9/19—City, W. C. Hyde, city mgr., sewage treatment plant, 4,000 ft. 24 and 30 in. re.n.-con. sanitary sewers, $1,100,000. Extended date. Banister Eng. Co., 1549 University Ave., St. Paul, engr. CD 8/1.

† **Kansas**—B.A. 9/20—U. S. Eng., 601 Davidson Bldg., Kansas City, Mo., approx. 975,000 cu. yd. earth work emergency repairs to levees on Kansas River between Junction City and Turner, Delaware River and Strancer Creek CIVENG 23-028-52-46.

† **Kansas**—B.A. 9/21—U. S. Eng., 601 Davidson Bldg., Kansas City, Mo., work on 4,500 ft. of floodwall.

Minn., Preston—B.A. 9/25—Fillmore Co., C. V. Michener, aud., rock base, bit. surf., 9.1 mi. between 4 mi. west of Harmony and 1 mi., south of York, $60,-000. Plans deposit 50c.

† **Missouri**—B.A. on or about 9/26—U. S. Eng., 601 Davidson Bldg., Kansas City 8, Mo., approx. 86,000 cu. yd. earthwork emergency repairs to levees on right bank of Missouri River, DeWitt to Lupus Bends, CIVENG 23-028-52-49. CD 6/1/44.

† **Missouri**—B.A. 9/26—U. S. Eng., 601 Davidson Bldg., Kansas City 8, Mo., approx. 190,000 cu. yd. earthfill emergency repairs to levees on right bank of Missouri River, Lupus to Cote Sansdessen Reaches, CIVENG 23-028-52-48. CD 6/1/44.

† **Montana**—B.A. 9/27—Bureau Reclamation, Dpt. Interior, Columbia Falls, dismantling, moving bridges from Hungry Horse reservoir, Hungry Horse Proj. Spec. 1000-234, Extended date. L. N. McClellan, Bldg. 1A, Denver Federal Center, Denver, Colo., ch. engr. CD 8/10.

† **Nebraska**—SUB-STATION—B.A. 9/27—Bureau Reclamation, Dpt. Interior, P. O. Box 280, Casper, Wyo., furnishing, del. structural steel for Chadron sub-station, Transmission Div., Missouri River Basin Proj., Inv. No. 703S-207; adv. ENR 9/13.

Tex., Dallas—B.A. 9/27—Somes, Dallas Co. Court, Court House, b.conc. 4 in. sect. Belt Line Rd., $170,000; c. conc. 1 mi. sect. Belt Line Rd. $131,-000; b. conc. 5 mi. sect. Belt Line Rd. $213,000. Koch & Fowler, 3900 Lemmon Ave., Dallas, engrs. Jack Davis, co. engr. CD 2/27/50.

Tex., Timpson—B.A. 9/28—City, supply well, addnl. water lines, $40,000. Wisenbaker, Fix & Assoc., 1104½ S. Bois d'Arc St., Tyler, engrs.

Tex., Timpson—B.A. 9/28—City, addnl. sanitary sewer lines, some sys. rehabilitation, $75,000. Wisenbaker, Fix & Assoc., 1104½ S. Bois d'Arc St., Tyler, Tex., engrs.

Tex., Garland—Bids Asked—Rue. E. Skillern & Assoc., 520 N. Pearl St., Dallas, grading, paving auto parking area, $75,000. CD 12/6/50.

BIDS ASKED—BUILDINGS

Minn., Blue Earth—POWER PLANT—B.A. 9/18—City, Bd. P. Wks., J. J. Kehe, secy., boiler room, install piping, misc. equip. and controls in municipal power plant, $500,000. Plans deposit $25. Helmick & Lutz, 405 Essex Bldg., Minneapolis, engrs.

Tex., Carrollton—SCHOOL—B.A. 9/20—Carrollton Independent School Dist., Carrollton elementary school, $300,000. Plans deposit $25. Extended date. Wyatt C. Hedrick, 904 Fort Worth Ave., Dallas, engr. CD 8/13.

▲ **Minn., Minneapolis**—HOUSING—B.A. 9/21—Minneapolis Housing & Redevelopment Auth., 1014 Metropolitan Life Bldg., housing at Site F Williams and St. Mary's Aves., S.E., $2,000,000. Extended date. Plans deposit $40. Larson & McLaren, 1901 Foshay Tower, Minneapolis, archts. CD 7/25.

Tex., College Station—LIBRARY, ENGINEERING—B.A. 9/27—Agricultural & Mechanical College of Texas, College Station, 2 story bsmnt., 14,000 sq. ft., frame, masonry engineers library bldg., steam heating, $303,000. Herbert Voelcker & Assoc., 1202 Dennis Ave., Houston, Zone 4, archts. 3 story 38,500 sq. ft., concrete, masonry engineering bldg., one freight elevator, steam heating, etc. $611,000. Adams & Adams and Wyatt C. Hedrick, archts. Plans deposit $50 each. CD 6/27, under LB.

Tex., Garland—SHOPPING CENTER—Bids Asked—Rue E. Skillern & Assoc., 520 N. Pearl St., Dallas, shopping center, $600,000. CD 12/6/50.

SOON LETS CONTRACT—BUILDINGS

▲ **Minn., Crookston**—HOSPITAL—Bethesda Hospital Bd. Trustees, A. T. Atkins, admin., Crookston, soon lets contract hospital, $1,000,000. CD 8/23.

Minn., St. Paul—SHOPPING CENTER—Highland Center, Inc., c/o P. E. Crosier & Son, archts., 2441 Lyndale Ave S., Minneapolis, soon lets contract, 1 story, part bsmnt., 114x480 ft., Highland Park Shopping Center, Cleveland Ave. and Ford Parkway, $500,000.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

MINNESOTA—State Hy. Dpt., 1246 University Ave., St. Paul, Minn.

H. Ganley, Inc., 2336 Hampden Ave., St. Paul, Minn. CA $113,698. Plant-mixed bit. surf. 8 mi. on South Lyndale Ave. between Jct. TH 13 and south limits of Minneapolis, Maintenance Dist. 9, SP 1915 and 2727. Bids Aug. 24. CD 8/16.

State, Dpt. Admin., 19 State Capitol, St. Paul, Minn. rejected bids Aug. 14, dikes and ditches at Roseau River Game Refuge, MINNESOTA. LB $234,977. CD 8/23, under LB.

Pittsburgh-Des Moines Steel Co., 915 Tuttle St., Des Moines, Ia. LB $50,100. 500,000 gal. standpipe type water storage tower, COLUMBIA HEIGHTS, MINN. City, LeRoy Trailon, mgr., Columbia Heights, Minn. Bids Aug. 28. CD 6/6/49.

H. Ganley, Inc., 2336 Hampden Ave., St. Paul, Minn. CA $148,270. State Proj. 73-26, Cooperative Agreement No. C 843, street improvs., excav., curb and gutter, bit. surf., grav. base, etc., FREEPORT, MINN. Village, W. Meinz, clk., St. Joseph, and Village, E. Hiltner, clk., Freeport, Minn. Bids Aug. 22. CD 8/16.

Lametti & Lametti, 615 Drake St., St. Paul, Minn. LB $110,168. sanitary sewer improvs., incl. lateral intercepting and outlet sewers, service connections, two sewage lift stations, etc., LAUDERDALE, MINN. Village, G. O. Gunderson, clk., 1739 Malvern Ave., St. Paul, Minn. Bids Aug. 24. CD 8/16.

Komatz Constr. Co., St. Peter, Minn. LB, $69,745. curb and gutter, 30 blocks hot-mixed bit. on grav. surf. etc., LEWISVILLE, MINN. Village, L. Larson, clk., Lewisville, Minn. Bids July 23. CD 7/18.

H. H. Frankamp, Mankato, Minn. CA $84,400. reconstr. 1 mi. sanitary sewers, North Mankato, MANKATO, MINN. Village, M. R. Wigley, clk., Mankato, Minn. Bids Aug. 20. CD 5/10/49.

L. Joyce, Rochester, Minn. CA **$92,182.** crushed rock surf. and concrete box culverts 3.6 mi. between Little Valley and north county line; CA **$64,974.** 3 mi. between West County line and 0.5 mi. west of Genoa, ROCHESTER, MINN. Olmstead Co., Frances L. Underleak, aud., Rochester, Minn. Bids Aug. 21. CD 8/2.

Village, J. Justad, clk., St. Louis Park, Minn. rejected bids Aug. 6, water main exten., ST. LOUIS PARK, MINN. LB **$287,979.** Will re-advertise. CD 8/16 under LB.

Lametti & Lametti, 615 Drake St., St. Paul, Minn. CA **$238,027.** sanitary sewer exten., for San Dwe Dist. No. 2-K, ST. LOUIS PARK, MINN. Village, J. Justad, clk., St. Louis Park, Minn. P. W. Smith, St. Louis Park, village, engr. Bids Aug. 20.

Pocahontas County, Marie Pavik, county auditor, Pocahontas, Ia., rejected bids Aug. 23, 5.3 mi. open ditch, incl. 360,000 cu. yds. channel excavation and related incidental items in Drainage Dist. 77, LB, **$34,020.** POCAHONTAS, IA. Project postponed indefinitely. CD 8/9.

† **W. A. Lynn Constr. Co.**, 1022 Trust Bldg., Lincoln, Neb. LB **$545,496.** 21,550 ft. pile dikes revetment and repairs, Missouri River, Camden to Sheepnose Bends, CIVENG 23-028-52-13, MISSOURI. U. S. Eng., 601 Davidson Bldg., Kansas City 8, Mo. Bids Aug. 28. CD 8/17.

▲ **B & M Constr. Co.**, Petroleum Bldg., Oklahoma City, Okla., CA, **$1,174,000,** constr. gas line and distribution system DeQueen to Mena, MENA, ARK. City, Mena, Ark. Bids Aug. 7. CD 7/25.

SOUTH DAKOTA—State Hy. Comn., Pierre.
Myrl Clark, Tyndall, S. D., CA, **$92,336,** base course, Class A surf., 6.928 mi. S 66 (5), Union Co.
Megarry Bros., St. Cloud, Minn., CA. **$219,648.** bit. surf. 16.344 mi. Proj. F 41 (7), Marshall Co.
Jay W. Craig Co., 1813 N.E. California St., Minneapolis, Minn., CA. **$125,940.** bit. surf., 9.511 mi. Proj. F 41 (9) and F 139 (2), Roberts Co. Bids Aug. 14. CD 8/2.
Peters & Doyle Constr. Co., Albion, Neb., CA. **$200,205.** 54.45 mi. rural distr. lines, Keith and Perkins Counties, NEBRASKA. Midwest Electric Membership Corp., Grant, Neb. Bids Aug. 23. CD 8/3.
C. S. Foreman Constr. Co., 1221 Baltimore St., Kansas City, Mo., CA, pipe line across Platte River; **Bills & Troth Constr. Co.**, Wright Bldg., Tulsa, Okla., CA, balance of pipe line from south side of Platte River to 84 and Center St., Omaha, Cass, Sarpy and Douglas Counties, NEBRASKA. Northern Natural Gas Co., Aquila Court Bldg., Omaha, Nebr. Total est. **$500,000.** John S. Adams, c/o owner, ch. engr.
City, Holdrege, Neb., abandoned project, power plant changes and imprvs., HOLDREGE, NEB. Bids Aug. 17. CD 8/7.
† **Star Industries, Inc.**, 610 N. Main St., Wichita, Kan. LB **$463,880.** Five masonry buildings at Wichita Air Force Base. Inv. KCM 52-7, Group C, WICHITA, KAN. U. S. Eng., 601 Davidson Bldg., Kansas City 8, Mo. Bids Aug. 24. CD 8/15.
Santa Rosa Telephone Co-operative, Vernon, Tex., Force Account. Approx. **$100,000.** 200 mi. new pole lines, near Vernon, Foard and Clay Counties, TEXAS. CD 8/20.
† **McKinley Co.**, P. O. Box 1501, Lubbock, Tex., LB, **$414,659,** est. $594,405, steam air condensate return sys., modif bldg. (structural, remove existing plant and install new plant) 12,000 ft. new steam line, 4,700 ft. existing steam line renovation; 18,000 ft. New air line, 29,000 ft. new condensate return line, Inv. 291-52-13, AMARILLO, TEX. U. S. Atomic Energy Comn., Los Alamos, N. M. Bids Aug. 23. CD 8/2.
Southern Const. Co., 1901 Meadowbrook St., Austin, Tex., LB. **$83,456.** Shoals Creek Bridge, east Sect. AUSTIN, TEX., City, City Hall, Austin, Tex., Julian Montgomery, 602 West Ave., Austin, Tex., engr. Bids Aug. 24. CD 11/15/50.
Bartlett Electric Co-operative, Inc., Bartlett, Tex., rejected bids Aug. 25, headquarters and equip. bldg., BARTLETT, TEX. J. E. Johnson, 202 E. Crockett St., Cameron, Tex., engr. CD 7/26.
† **Stanley W. Newman Co. Inc.**, Box 1646, Mobile, Ala., LB. **$115,000.** est. $200,000. A10 warehouse, Bryan Jet Airbase, BRYAN, TEX. U. S. Eng., 606 Santa Fe Bldg., Galveston, Tex. Bids Aug. 21. CD 7/30.
Lone Star Gas Co., 1915 Wood St., Dallas, Tex. Own Forces. Approx. **$145,000.** 50 mi. gas loop line from south of Dallas to near Rockwall and Greenville, DALLAS, TEX. CD 5/1/47.
† **U. S. Eng.**, 606 Santa Fe Bldg., Galveston, Tex., Purchase and hire. **$65,000.** 5,000 volt No. 8 underground cable line, FORT HOOD, TEX. CD 3/21, under LB.
Ed Baker, c/o Baker Bros., 106 Chandler St., Fort Worth, Tex., Own Forces. Approx. **$45,000.** Water lines, FORT WORTH, TEX.
Ed. Baker, c/o **Baker Bros.**, 106 Chandler St., Fort Worth, Tex., Own Forces. **$68,500.** Sanitary sewers, FORT WORTH, TEX.
Ed. Baker, c/o **Baker Bros.**, 106 Chandler St., Fort Worth, Tex., Own Forces. Approx. **$70,000.** Street constr. and asph. paving, FORT WORTH, TEX.
Chicago, Bridge & Iron Co., 5625 Clinton Dr., Houston, Tex., LB. **$52,294** 300,000 gal. steel elevated water storage tank, FREEPORT, TEX. City, Freeport, Tex. Dunbar & Dickson, Box 78, Freeport, Tex., engrs. Bids Aug. 30.
City, Graham, Tex., Force Account. **$35,000.** Addnl. water lines, GRAHAM, TEX. CD 2/9.
City, Graham, Tex., Force Account. **$60,000.** Sewage disposal plant unit, GRAHAM, TEX. CD 2/9.
City, Greenville, Tex., Own forces. **$45,000.** some WW imprvs., GREENVILLE, TEX., CD 6/14.
City, Greenville, Tex., Own forces. **$75,000.** some sanitary sewers, GREENVILLE, TEX. CD 6/15.
Lincoln Land Co., 406½ Milam St., Houston, Tex., Own Forces. **$45,000.** c.i. water lines, facilities, near HOUSTON, TEX., Edminster Eng. Co., 5410 Kirby Dr., Houston, Tex., engr.
Lincoln Land Co., 406½ Milam St., Houston, Tex., Own Forces. **$62,500.** Sanitary sewers, near HOUSTON, TEX. Edminster Engr. Co., 5410 Kirby Dr.; Houston, Tex., engr.
Lincoln Land Co., 406½ Milam St., Houston, Tex., Own Forces. Approx. **$50,000.** Site earthwork, grading, levelling, open drainage, filling, near HOUSTON, TEX. Edminster Eng. Co., 5410 Kirby Dr., Houston, Tex., engrs.
Lincoln Land Co., 406½ Milam St., Houston, Tex., Own Forces. Approx. **$75,000.** c. conc. streets, near HOUSTON, TEX. Edminster Engr. Co., 5410 Kirby Dr., Houston, Tex., engrs.
McManis & Landry, 1825 Wroxton St., Houston, Tex. Owner Builds. **$45,000.** Water sys., HOUSTON, TEX.
McManis & Landry, 1825 Wroxton St., Houston, Tex., Owner Builds. **$65,000.** Sanitary sewers; Approx. $65,000. Open drainage, storm sewers, HOUSTON, TEX.
McManis & Landry, 1825 Wroxton St., Houston, Tex. Owner Builds. Approx. **$70,000.** Street constr., concrete curbs, gutters, asph. paving, HOUSTON, TEX.
U. S. Eng., 606 Santa Fe Bldg., Galveston, Tex., rejected bids Aug. 28, water supply well No. 1, LB. **$34,445;** water supply well No. 2, LB. **$48,862,** Inv. No. Eng 41-243-52-22, LACKLAND AIR BASE (Br. San Antonio) TEX. CD 8/29, under LB.
† **U. S. Eng.**, 606 Santa Fe Bldg., Galveston, Tex., postponed indefinitely construction records and processing bldgs., ENG 41-243-52-19, LACKLAND AIR BASE (Br. San Antonio) Tex. CD 8/15.
† **Baldwin-Lima-Hamilton Corp.**, 60 E. 42 St., New York, N. Y., LB. **$560,000.** Four 168-in. butterfly valves, four control units; one lot of anchor bolts, Spec. D-4535 (IBWC). Falcon Dam and power plant, ROMA, TEX. Bureau Reclamation, Dpt. Interior, El Paso, Tex. Bids July 31. CD 7/25.
† **Westinghouse Electric Corp.**, Union Bank Bldg., Pittsburgh, Pa., LB. **$356,470,** four 17/500/3/333/29,167 kva power transformers for United States and Mexican power plants. Falcon Dam and Power Plant, Spec. D 4541 (IBWC). ROMA, TEX. Bureau Reclamation, Dpt. Interior, El Paso, Tex. Bids Aug. 2. CD 7/25.
City, City Hall, Military Plaza, San Antonio, Tex., Force Account, **$75,000.** Tie-in road for Freeway; **$70,000.** One unit of Southside road artery extens., due to expressway, SAN ANTONIO, TEX. Tom Coghill, city engr. CD 8/12/49.

BUILDINGS

LOW BIDS AND CONTRACTS

Alexander & Kingbay, 4641 Hiawatha Ave., Minneapolis, Minn. CA **$581,784.** Wenonah Grade School, MINNEAPOLIS, MINN. Bd. Educ., E. H. Enger, archt.-engr., 807 Broadway NE, Minneapolis, Minn. CD 8/15 under LB.
Madsen Constr. Co., 2110 Nicollet Ave., Minneapolis, Minn. CA **$532,600.** South West Grand SCHOOL, MINNEAPOLIS, MINN. Bd. Educ., 807 Broadway N. E., E. H. Enger, archt. engr., Minneapolis, Minn. CD 8/29 under LB.
Standard Constr. Co., 250 Builders Exchange Bldg., Minneapolis, Minn. CA **$117,000.** 1 story, 147x195 ft. WAREHOUSE and OFFICE, 124 12 Ave. S., MINNEAPOLIS, MINN. Vincent Brass & Copper Co., 100 N. 2 St., Minneapolis, Minn. P. Rosier & Son, 2441 Lyndale Ave. S., Minneapolis, Minn., archts.
▲ **Madsen Constr. Co.**, 2110 Nucolle Ave., Minneapolis, Minn. and **Steenberg Constr. Co.**, 1371 Marshall Ave., St. Paul, Minn. LB **$4,985,482.** general constr. superstructure Mayo Memorial MEDICAL CENTER, Main Campus, MINNEAPOLIS, MINN. Regents of University of Minnesota, R. S. Callaway, purch agt., 323 Admin. Bldg., Main Campus, Minneapolis, Minn. Bids Aug. 29. CD 7/3.
Associated Builders, Inc., Virginia, Minn., CA. 2 story, 91x200 ft. diesel locomotive SHOP, VIRGINIA, MINN. Oliver Iron Mining Co., Wolvin Bldg., Duluth, Minn. H. S. Starin, 307 Sellwood Bldg., Duluth, Minn., archt. Bids July 31.
W. Bros. Boiler & Mfg. Co., 1057 10 Ave. S. E. Minneapolis, Minn. LB **$156,969.** steam generating unit at municipal POWER PLANT, WINDOM, MINN. City, city clk., Windom, Minn. Bids Aug. 27. CD 7/11.
Abild Constr. Co., 3708 S.W. 12 St., Des Moines, Ia., CA, **$175,000** TERMINAL, DES MOINES, IA. Bruce Motor Freight Co., 5 and Elm Sts., Des Moines, Ia. H. W. Hartupee, 1260 34 St., Des Moines, Ia., archt.
Brockmeyer Constr. Co., 634 N. Grand Blvd., St. Louis 3, Mo. CA **$646,320,** 1 story HOSPITAL addn., incl. maintenance shops, bldgs., ST. LOUIS, MO. St. Luke's Hospital, Bd. Directors, Robert B. Smith, pres., 5535 Delmar Blvd., St. Louis 12, Mo. Bids July 19. CD 6/22.
Bauer Const. Co., 710 S. 30 St., Lincoln, Neb., CA, **$85,000** FLOUR MILL addn., LINCOLN, NEB. Gooch Milling & Elevator Co., 6 and South Sts., Lincoln, Neb. CD 8/3.
W. T. Conroy, 1525 Locust St., Kansas City, Mo., LB **$241,443,** four steam generating units at POWER PLANT incl. bldg. alterations at University of Kansas Medical Center, KANSAS CITY, KAN. State Bd. Regents, State House, Topeka, Kan. Charles Marshall, state archt. CD 4/20/49.
▲ **Chas E. Wawter**, 51 and Roe Blvd., Roeland Park, Kan. CA **$1,000,000.** 3 story, bsmnt., 60,000 sq. ft. DEPARTMENT STORE, Cedar, Linden and 52 Sts. and Sycamore Dr. Roeland Park, OLATHE, KAN. Geo. B. Peck, Inc., 11 & Main St., Kansas City, Mo. Luther O. Willis, Westover Bldg., Kansas City 3, Mo., archt. Awarded Aug. 27.
Whipple Const. Co., 4015 Fernwood St., Houston, Tex., CA. Approx. **$300,000.** 23 DWELLINGS, ANGLETON, TEX., A. J. Whipple & Assoc., 4015 Fernwood St., Houston, Tex. CD 8/27.
Leslie F. Crockett Const. Co., 112 Academy Dr., Austin, Tex., CA. **$672,116.** Anderson Negro HIGH SCHOOL, AUSTIN, TEX., Austin Independent School Dist., Austin, Tex. Bids Aug. 23. Awarded Aug. 27. CD 8/29, under LB.
Fretz Constr. Co., 2000 Eastwood Ave., Houston, Tex., CA. **$310,000.** 2 story masonry BANK, BELLAIRE, TEX. Bellaire State Bank, 2121 W. Holcombe St., Houston, Tex. CD 5/8.
O'Rourke Constr. Co., 1001 W. Commerce St., Dallas, Tex., CA **$206,000.** WAREHOUSE, DALLAS, TEX. General Electric Co., 1801 N. Lamar St., Dallas, Tex., CD 7/18.
Marquette Constr. Co., 7907 Hartford St., Houston, Tex., LB. **$419,888.** est. $400,000. 48,000 sq. ft. brick, steel frame, Denver SCHOOL bldg. addn., concrete pier and beam fdn. etc. HOUSTON, TEX. Houston Independent School Dist., 1600 Washington St., Houston, Tex., Bids Aug. 22. CD 8/1.
Leo F. Corrigan, Mercantile Bank Bldg., Dallas, Tex. held up project indefinitely, SHOPPING CENTER, N. Shepherd Dr., **$1,000,000.** HOUSTON, TEX. CD 1/25.
Dryden Corp., 5150 Griggs Rd., Houston, Tex., Owner Builds. Approx. **$304,000.** HOUSING proj. HOUSTON, TEX. CD 8/16.
J. S. Norman Building Corp., 4815 Richmond Rd., Houston, Tex., Owner Builds. **$310,000.** 25 DWELLINGS, HOUSTON, TEX. CD 7/31.
North Main Corp., c/o Wm. E. Ladin, M. Esperson Bldg., Houston, Tex. Own forces. Approx. **$90,000.** remodeling, imprv., expanding bulk PLANT into industrial bldg. HOUSTON, TEX.
Texas Real Estate & Constr. Corp., c/o Andrew Urban, Jr. 1539 Nevada St., Houston, Tex., Owner Builds. **$390,000.** 50 HOUSING units. HOUSTON, TEX.
Jim West Building Co., 3300 Griggs Rd., Houston, Tex. Owner Builds. Approx. **$345,000.** HOUSING project. HOUSTON, TEX. CD 8/11/49.
▲ **Robert E. McKee, General Contr. Inc.**, 2708 Inwood Rd., Dallas, Tex., CA. **$1,422,219,** 8 story HOSPITAL; **$519,000,** NURSES' HOME, LUBBOCK, TEX. Lubbock Memorial Hospital, Lubbock, Tex. Bids Aug. 2. Awarded Aug. 27. CD 8/10, under LB.
Tidmore Constr. Co., 1902 Avenue M, Lubbock, Tex. LB. **$642,443.** 2 story, brick, concrete, R. W. Matthews Junior HIGH SCHOOL, LUBBOCK, TEX. Lubbock Independent School Dist., Lubbock, Tex. Bids Aug. 28. CD 8/13.
Brown & Root, Inc., Box 3, Houston, Tex., CA. **$985,000.** iron ore beneficiating PLANT, near RUSK, TEX. Sheffield Steel Corp., ARMCO subsidiary, Ship Channel, Houston, Tex. 3/22/51.
E. J. Burke & Sons, 4220 S. Zarzamora St., San Antonio, Tex., Owner builds. **$550,000.** frame HOUSING, mostly in the Highlands, SAN ANTONIO, TEX. CD 11/3/48.
▲ **E. J. Burke & Sons**, 4220 S. Zarzamora St., San Antonio, Tex., Owner builds. **$1,000,000.** frame HOUSING units, concrete slab fdn., off New Braunfels Ave., SAN ANTONIO, TEX. CD 11/3/49.

FAR WEST

BIDS ASKED—HEAVY CONSTRUCTION

† **Washington**—B.A. 9/20—Bureau Reclamation, Dpt. Interior, Ephrata, Lake Lenore Pumping Plants 1 and 2, intake and connecting channels, Columbia Basin Proj., approx. 2 to 4 mi. north of Soap Lake, Spec. DC 3537; adv. ENR 9/13.
† **Washington**—B.A. 9/20—Bureau Reclamation, Dpt. Interior, Ephrata, 660,000 cu. yd. excav., 21,500 cu. yd. concrete, 25,000 lin. ft. concrete pipe, 444 M. b. m. timber, structures, area W-5 laterals, sublaterals, wasteways, drains for West Canal laterals and West Canal protective works, Columbia Basin Proj., Spec. DC 3530; adv. ENR 9/13.
Calif., Folsom—B.A. 9/21—City, Fire House, Folsom Calif., sewerage treatment plant. Plans deposit $25 L. Cedric Macabee, 156 University Ave., Palo Alto, engr. Extended date. CD 8/23.
Calif., Lake Arrowhead—B.A. 9/24—Lake Arrowhead Sanitation Dist., Court House, sewage collection system, treatment and effluent works, $656,600. F. S. Currie Anderson Bldg., San Bernardino, archt. CD 7/7/50.
† **California**—B.A. 9/25—Bureau Reclamation, Dpt. Interior, Bldg. 53, Denver Federal Center, Denver, Colo., furnishing, del. f.o.b. cars at shipping point or f.o.b. cars at Goleta, Calif., tube valve for regulating works, Tecolote Tunnel, Cachuma Proj., Spec. DS-3531. CD 4/20/45.
Calif., San Diego—B.A. 9/25—San Diego City Council, Civic Center, dredging and filling, approx. 1,000,000 cu. yd., Mission Bay. Approx. $50,000. Plans deposit $10. E. J. Amar, port engr.

(Continued on page 112)

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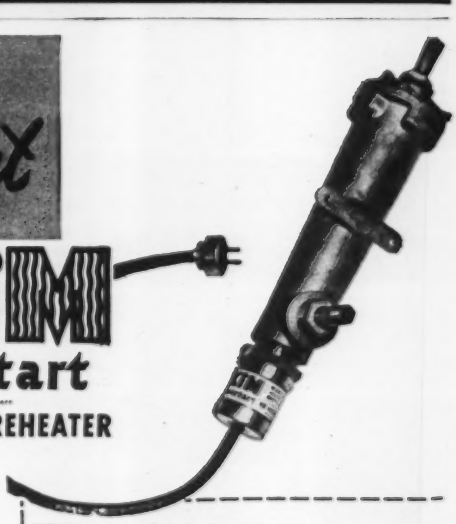

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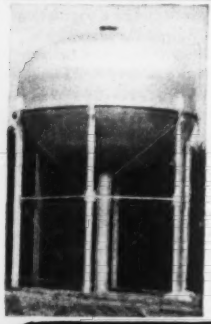

• Whether you want conventional high-pressure units or something *special*—send us your inquiries. COLE can build you the kind of high-pressure tanks or vessels you require—any size, any shape, any metal. Our experience (of almost a century) in the design and fabrication of metal tanks may be of help to you. Write for catalog—"Tank Talk."

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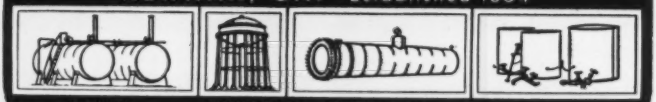
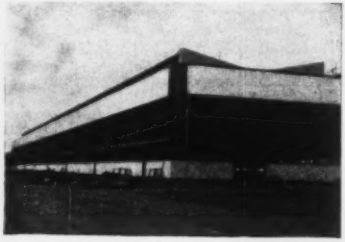
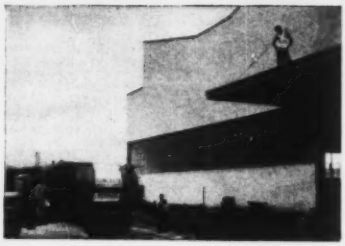
NEWNAN, GA. *Established 1854*



TANKS TOWERS CYLINDERS VESSELS





CEMENT GUN CO. USES "GUNITE" for WALLS of INDUSTRIAL BUILDINGS

The pictures show the Republic Aviation Corporation building at Farmingdale, N. Y. The walls above the sash and all monitor ends are 2" mesh reinforced "GUNITE" carried on the steel framing. We did this job in 1941 under plans and specifications by Albert Kahn Associated Architects and Engineers. It is similar to scores of other industrial buildings on which we have built "GUNITE" exterior walls, and in many cases interior partitions.

"GUNITE" provides weatherproof, light-weight, permanent walls for industrial buildings, which fit well into modern architecture. The inside surfaces of the walls are smooth (plywood form surface) and therefore do not collect dust and may be painted as desired.

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CEMENT GUN COMPANY
"GUNITE" CONTRACTORS
GENERAL OFFICES—ALLENTOWN, PENNA. U.S.A.
MANUFACTURERS OF THE CEMENT GUN

(Continued from page 110)

† **Washington**—TRANSFORMERS, etc.—B.A. 10/4—Bureau Reclamation, Dpt. Interior, Bldg. 53, Denver Federal Center, Denver, Colo., furnishing, del. f.o.b. cars shipping point or f.o.b. cars Othello, outdoor power transformers; outdoor distr. transformers; outdoor lightning arresters; outdoor horn-gap switches; and outdoor fuse disconnecting switches for switchyard at Upper Scooteney (PE-27A), Upper Scooteney Relift (PE27A Relift) Lower Scooteney (PE 27), Lower Saddle Gap PE16.4.4) and PE-17 Pumping Plants, Columbia Basin Proj. Inv. No. DS-3529.

† **Oregon**—B.A. 10/10—U. S. Eng., Bldg. 602 City-County Airport, Walla Walla, Wash. 65 diffusion chamber valves for McNary Dam fishways. Inv. 52-12.

BIDS ASKED—BUILDING

Calif., San Gabriel—SCHOOL—B.A. 9/25—San Gabriel School Dist., 301 S. San Gabriel Blvd., 1 story, steel, stucco Roses Road School, $422,220. Kistner, Curtis & Wright, 816 W. 5 St., Los Angeles, archts. CD 8/20. under LB.

Calif., Oakley—SCHOOL—B.A. 9/26—Oakley Union Elementary School Dist., Oakley, classroom wing No. 3 Elementary School. Plans deposit $25. John Lyon Reid, 109 Stevenson St., San Francisco, archt. CD 8/3.

Calif., Vallejo—HIGH SCHOOL—B.A. 10/15—Vallejo City Unified School Dist., 640 Carolina St., Dr. Benjamin Hogan, Junior High School. Plans deposit $50 Harry J. Devine, 1012 J St., Sacramento, archt. CD 7/9.

SOON LETS CONTRACT—BUILDINGS

▲ **Calif., El Segunda**—BUILDING—Douglas Aircraft Co., Inc., 827 Lapham St., soon lets contract 1 story, steel frame, 400x475 ft., Bldg. No. 2, $2,500,000. Van Dyke & Barnes, 2234 Beverly Blvd., Los Angeles, Calif., archts. and engrs. CD 5/29.

Calif., Ventura—WAREHOUSE, etc.—Southern California Gas Co., 810 S. Flower St., Los Angeles, soon lets contract warehouse, shops, garage, etc. at Station 50. Approx. $84,000.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

ARIZONA—State Hy. Dpt., 17 Ave. and Jackson St., Phoenix.

Tanner Constr. Co., 731 N. 19 St., Phoenix Ariz., CA, $146,767, bit. 2½ mi. over present alignment, McDowell Rd., Maricpa Co. Bids Aug. 24. CD 9/17.

† **Allis-Chalmers Mfg. Co.**, 1126 S. 70 St., Milwaukee, Wis., CA, $184,291, Sch. 1.

General Electric Co., Luhr Tower, Phoenix, Ariz., CA, $65,141, Sch. 2, transformers, auto transformer, circuit breaker, Prescott Substation, Davis Dam Proj., Spec. 3005-26, ARIZONA. Bureau Reclamation, Dpt. Interior, Phoenix, Ariz. Bids June 6, awarded Aug. 17. CD 5/23.

Washington—State Hy. Dpt., Olympia, rejected bids Aug. 28, reconstr. Columbia Beach ferry landing, incl. double-lane loading bridge, Island Co. CD 8/14.

† **Otis Williams Co.**, Helena, Mont., CA, $93,215, est. $126,671, levee and pumping plant on right bank of Columbia River 6 mi. west of here, Inv. No. 52-7, WASHINGTON. U. S. Eng., Bldg. 602, Coty-County Airport, Walla Walla, Wash. Bids Aug. 28. CD 7/25.

Washington—State Hy. Dpt., Olympia, Wash.
Fiorito Bros., 1100 Leary Way, Seattle, Wash., CA, $363,618, c. conc. 4.5 1 mi. Primary State Hy. 1, Kalama River to Paxton Rd., Cowlitz Co. Bids Aug. 28. CD 8/14.

C & E Constr. Co., Yakima, Wash., CA, $101,098, est. $98,070. LCRP No. 422, grading, draining, ballast and surf. 3.4 mi. Keys and Riverside Rds.; CRP 435 grading, draining, ballast and surf. 3 mi. Dekker Rd. northwest of Sunnyside, YAKIMA, WASH. Yakima Co. Court House, Yakima, Wash. Bids Aug. 24.

OREGON—State Hy. Comn., State Office Bldg., Salem, **Porter W. Yett**, 6500 N. E. Ainsworth St., Portland, Ore., CA, $1,286,424. grading, paving 6.5 mi., 2 bridges, Bunker-Hill sect., Oregon Coast Hy., Coos Co. Bids Apr. 12. Awarded May 15. CD 4/18. under LB.

OREGON—State Hy. Comn., Highway Bldg., Salem,
Babler & Rogers, 4716 S.E. Milwaukie St., Portland, Ore., CA, $338,690, paving, crushed materials in stockpiles 18.15 mi. Warm Springs Hy. Wasco Co. Bids Aug. 20. Awarded Aug. 20. CD 8/10.

† **OREGON**—Bureau P. Rds., Dpt. Commerce, Morgan Bldg., Portland,
Kuckenberg Const. Co., 11104 N. E. Holman St., Portland, Ore., CA, $283,717. grading 2.317 mi. North Umoqua Hy., Douglas Co. Bids Aug. 24. Awarded Aug. 24.

▲ † **S. Morgan Smith Co.**, York, Pa., CA, $8,177,887. hydraulic turbines for McNary Dam, Civeng 45-164-51-56. OREGON, U. S. Eng., City-County Airport, Walla Walla, Wash., Bids June 15. Awarded July 17. CD 6/21. under LB.

† **Lee Hoffman**, 535 S. E. Water St., Portland, Ore., CA, $726,155, double circuit sect. Maupin-Detroit 230 kv line, Inv. 5665, Marion Co. OREGON. Bonneville Power Admin., 827 N. E. Oregon St., Portland, Ore., Bids Apr. 6, Awarded May 10. CD 4/11. under LB.

Carl M. Halvorson, Builders Exchange Bldg., Portland, Ore., LB. $168,065. filtration plant, COQUILLE, ORE. City, City Hall, Coquille, Ore., Bids Aug. 27. Awarded Aug. 27. CD 8/10.

Natt McDougall Co., Pittock Block, Portland, Ore., LB. $83,905, Washington approach to Hood River-White Salmon bridge across Columbia River, HOOD RIVER, ORE., Port of Hood River, Hood River, Ore., Bids Aug. 24. CD 8/7.

CALIFORNIA—State Div. Hys., P. Wks. Bldg., Sacramento, Calif.,

Madsana Constr. Co., P. O. Box 910, San Luis Obispo, Calif., LB, **$63,876**, re.n.-con. slab bridge across Los Berros Creek 2 mi. south of Arroyo Grande, San Luis Obispo Co. Bids Aug. 22. CD 7/30.

CALIFORNIA—State Div. Hys., P. Wks., Bldg., Sacramento, Calif.

L. Biasotti & Son, P. O. Box 587, Stockton, Calif. LB **$140,152**, grading, surfacing 3.9 mi. Fresno-Coalinga Road between Coalinga-Mendota Rd. and Ford Ave., Fresno Co.

A. J. Raisch Paving Co., 900 W. San Carlos St., San Jose, Calif., LB, **$99,802**, wid'n, surf. 1.5 mi. between south city limits of San Jose and Tully Road, Santa Clara Co.

Arthur B. Siri Inc. and E. A. Forde, 1357 Cleveland Ave., Santa Rosa, Calif., LB, **$236,387**, grading, surf. 4.9 mi. Purple Draw and .9 mi. east of Santa Rosa and between Cotati and Sebastopol, Sonoma Co. Bids Aug. 22. CD 7/30.

CALIFORNIA—State Div. Hys. 120 S. Spring St., Los Angeles, Calif.

Osborn Co., 3200 Edgecliff Lane, Pasadena, Calif., LB, **$187,907**, grading, paving, rein.-con. girder bridge 3.5 mi. between Palmdale and 2 mi. east of Llano, Los Angeles Co. Bids Aug. 23. CD 7/30.

California—State Div. Hys., P. Wks. Bldg., Sacramento, **Granite Constr. Co.**, Box 900, Watsonville, Calif., LB $529,169, 2 rein.-con. bridge, underpass, grading, surf. streets etc. in San Luis Obispo, San Luis Obispo Co. Bids Aug. 22. CD 7/30.

H. Savin Constr. Corp., 10 Village St., East Hartford, Conn., and Merritt-Chapman & Scott Corp., 17 Battery Pl., New York, N. Y. LB, **$29,444,000**, Folsom Dam and appurtenant works Folsom Reservoir proj. near Folsom, serial No. Civeng 04-167-52-1. CALIFORNIA. U. S. Eng., 1209 Eighth St., Sacramento, Calif. Bids Aug. 31. CD 7/13.

M. W. Brown, Box 222, Redding, Calif., CA, **$76,043**, 1.95 mi. constr. county highway between Anderson and 2 mi. northeast ANDERSON, CALIF., Shasta Co. Hall of Records, Redding, Calif., Bids Aug. 24. Awarded Aug. 24. CD 8/8.

▲† ?. A. Westbrook & Morrison-Knudsen Co., 411 W. 5 St., Los Angeles, Calif., LB, **$1,692,920** extend runway and taxiway, 8L-26R, Spec. 29057, EL CENTRO, CALIF., Eleventh Naval Dist., San Diego, Calif. Bids Aug. 28.

J. A. Thompson & Son, Box 518, Inglewood, Calif., LB, **$370,926**, improv. portions Imperial Hy. between Sepulveda Blvd. and Coast Blvd., LOS ANGELES, CALIF., City Council, City Hall, Los Angeles, Calif. Bids Aug. 29. CD 8/22.

† Ofcco Constr. Co., 2650 Cherry St., Long Beach, Calif., LB, **$45,717**, boiler **$184,620**; furnish, install boilers for central heating plant, Naval Auxiliary Air Station Spec. 30843, NOY 29193, MIRAMAR, CALIF. Eleventh Naval Dist., San Diego, Calif. Bids Aug. 7. CD 7/25.

J & S Paving Co., Box 24, Palm Springs, Calif., LB $69,523, grading, surfacing Indian Ave., between Ramon Rd. and Alejo Rd., PALM SPRINGS, CALIF., City City Hall, Palm Springs, Calif. CD 4/5/49.

Bob Bosnyak, 3014 Worthen Ave., Los Angeles, Calif., LB, **$91,376**, sanitary sewer in Foothill Blvd., other streets SAN LUIS OBISPO, CALIF., City City Hall, San Luis Obispo, Calif. Bids Aug. 20. CD 8/7.

BUILDINGS

LOW BIDS AND CONTRACTS

Tucker Constr. Co., 2012 43 Ave. N., Seattle, Wash., LB $353,800, general contract, 1 story 85x128 ft., 85x180 ft., 66x100 ft., masonry Carl Cozier SCHOOL, BELLINGHAM, WASH. School Bids. Dist. 501, Bellingham, Wash. Bids Aug. 27.

E. F. Shuck Constr. Co., 535 Pontius Ave., Seattle, Wash., CA, **$84,999**, 2 story, 61x121 ft., WAREHOUSE and pumping room bldg., extraction unit bldg. 20x15 ft., 109x70 ft. and 69x85 ft. tank areas, for vanillin plant, SEATTLE, WASH. Monsanto Chemical Co., 1700 S. 2 St., St. Louis, Mo. Bids Aug. 20. CD 8/14.

† Lewis A. Hopkins Co., Yakima, Wash., CA, **$329,813**, est. $395,481, motor repair SHOP, quartermaster warehouse, cold storage bldg. and warehouse at national facilities Contract F for training center, ENG 45-108-52-24, YAKIMA, WASH. U. S. Eng., 4735 E. Marginal Way, Seattle 4, Wash. Bids Aug. 24, CD 8/14.

Leo S. Wynans, 3210 N. E. Broadway, Portland, Ore., CA, $718,000, HIGH SCHOOL, ONTARIO, ORE., School Dist. 8-C, Ontario, Ore. Bids Apr. 23. Awarded May 27. CD 5/1, under LB.

Donald & McKee, 414 Central Ave., Redlands, Calif., LB $325,879, Mary Lewis SCHOOL addn., BLOOMINGTON, CALIF., Bloomington Elementary School Dist., Bloomington, Calif., H. L. Gogerty, 3123 W. 8 St., Los Angeles, Calif., engr.

H. C. Smith, 718 E. 16 St., Los Angeles, Calif., CA, $200,000, 1 story, concrete BAKERY, EAST LOS ANGELES, CALIF., Preston Constr. Corp., 647 W. Washington St., Los Angeles, Calif., F. Thos. Collins, 921 W. Las Tunas Dr., San Gabriel, engr.

J. E. Stark, 1131 E. A St., Ontario, Calif., LB, **$688,939**, est. $496,809, frame, stucco, Lincoln SCHOOL addns., LA VERNE, CALIF., La Verne City School Dist., 6 and D Sts., La Verne, Calif. Bids Aug. 24.

E. C. Nesser Co., 4822 W. Jefferson St., Los Angeles, Calif., CA, $780,000, 154 St. SCHOOL, LAWNDALE, CALIF., Lawndale School Dist., 4110 W. 154 St., Lawndale, Calif. Bids Aug. 9. CD 8/20, under LB.

▲ Mac-Brigh Inc., 5961 Los Santos Dr., Long Beach, Calif., Owner Builds, **$1,250,000**, 150 frame, stucco DWELLINGS, McNab, Fairbrook and Senasac Aves., LONG BEACH, CALIF., Poper & Locket, Farmers Merchants Bldg., Long Beach, Calif., archts.

Wagner & Fremier, 5542 Cahuenga Blvd., Los Angeles, Calif., CA, $470,978, Meadows Ave. and Center St. SCHOOL ADDNS., MANHATTAN BEACH, CALIF., Manhattan Beach City School Dist., 1212 8 St., Manhattan Beach, Calif., Daniel, Mann, Johnson and Mendenhall, 672 S. Lafayette Park. Pl., Los Angeles, archts. Bids July 27.

C. C. Sharps, 306 E. Branch St., Arroyo Grande, Calif., LB, **$489,900**, new SCHOOL, PISMO BEACH, CALIF., Pismo Beach Elementary School Dist., P. O. Box B, Pismo Beach, Calif. Bids Aug. 21. CD 8/1.

▲ Holdener Constr. Co., 2608 R St., Sacramento, Calif., CA, **$1,116,990**, Rio Linda Junior HIGH SCHOOL, RIO LINDA, CALIF., Grant Union High School Dist., 1400 Grand Ave., Del Paso Heights, Calif., Bids July 25. Awarded Aug. 27. CD 8/3, under LB.

Cahill Constr Co., 206 Sansome St., San Francisco, Calif., LB, **$868,568**, general contract, Bret Harte Elementary SCHOOL, SAN FRANCISCO, CALIF., Dpt. P. Wks., City Hall, San Francisco, Calif. Bids Aug. 22. CD 7/31.

George W. Carter Co., 1721 W. Olympic Blvd., Los Angeles, Calif., CA, **$407,350**, Madrona and Riviera SCHOOLS, TORRANCE, CALIF., Torrance Unified School Dist., 2335 Plaza Del Amo, Torrance, Calif. Bids Aug. 24.

ALASKA

BIDS ASKED—HEAVY CONSTRUCTION

† Alaska—HYDRAULIC TURBINES—B.A. 9/27—Bureau Reclamation, Dpt. Interior, Bldg. 53, Denver Federal Center, Denver, Colo., hydraulic turbines for Eklutna Power Plant, Eklutna Proj., Inv. No. DS-3506. CD 10/6/50.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲† L. E. Baldwin, Inc., 1103 N. 36 St., Seattle 3, Wash., CA, **$3,481,400**, est. $4,166,479, airmens barracks, Inv. No. S93-507-52-1. Elmdorf Air Force Base, ALASKA. U. S. Eng., New Washington Hotel, Seattle 1, Wash. Bids Aug. 21. CD 8/27, under LB.

▲† C. F. Lytle, Green Constr. Co., S. Birch & Sons and J. C. Boespflug Const. Co., Anchorage, Alaska, CA, **$3,492,460**. Outside utilities, Inv. No. 51-66, Elelson Air Force Base, ALASKA. U. S. Eng. (APO 942, c/o PM, Seattle, Wash.) Anchorage, Alaska. CD 7/12. under LB.

† Hebb & Narodick Const. Co., 214 Alohan St., Seattle, Wash., LB, **$361,000**, est. $277,170, six 25x144 ft., One story steel, or wood frame bldgs., and connecting corridors at 183rd hospital, Inv. No. 52-8. Elmendorf Air Force Base, ALASKA. U. S. Eng. (APO 942, c/o PM, Seattle, Wash.) Anchorage, Alaska. Bids Aug. 24.

CANADA

BIDS ASKED—HEAVY CONSTRUCTION

P. E. I., Summerside—RAILWAY WHARF—B.A. 9/26—Secy Dpt. P. Wks., Hunter Bldg., Ottawa, Ont., railway wharf reconstr., imprvts. and dredging, 12,500 cu. yds. Class "A" material, 90,780 cu. yds. Class "B" material, steel sheet piling, creosoted piling and timber, rein.-con. filling about 90,750 cu. yds. freight shed, etc., Approx. $450,000. Plans deposit $50. R. Blais, c/o owner, engr. CD 3/19.

BIDS ASKED—BUILDINGS

Que., Quebec City—RECREATION—B.A. 9/17—F. X. Chouinard, City Hall, 1 story 114x208 ft., 40x190 ft., concrete Recreation bldgs., $250,000. Caron & Blatter, 144 St. John St., Quebec City, Que., archts. Ed. H. Hamel, City Hall, city engr. CD 9/5/50.

Ont., Toronto—APARTMENTS—B. A. 9/17—Twp., Elk., York Twp., 2700 Eglinton Ave. W., Toronto, Ont. 128 suites in 16 bldgs., 2 story 8 suites each bldg., brick, cinder concrete pensioners apartments, $650,000. Alex Tobias, 269 College St., Toronto, e gr. Eric W. Hounsom, 96 Bloor St. W., Toronto, archt., CD 7/9.

B. C., Victoria—MESS HALL, etc.—B.A. 9/18—J. L. Adams, 360 Homer St., Vancouver, B. C., one 500-man mess hall and one 180-men barrack block, for Defence Constr. (1951) Ltd., 360 Homer St., Vancouver, B. C. Plans deposit $50. J. L. Adams, 360 Homer St., Vancouver, B. C., engr. CD 6/26.

▲ N. S., Halifax—QUARTERS—B.A. 9/18—P. J. Mangan, engr., Central Mortgage & Housing Corp., 1032 Gottlingen St., Halifax, N. S., DND married quarters 30-units, Project 2-51. Approx. **$1,300,000**. Plans deposit $10.

B. C., Richmond—HIGH SCHOOL—B.A. 10/1—Secy-Treas. School Dist. 38, 375 Sexsmith Rd., Lulu Island, B. C., frame, stucco Junior-Senior High School. $880,000. Sharp & Thompson, Berwick, Pratt, 1553 Robson St., Vancouver, archts.

Que., Montreal East—WAREHOUSE—Bids Asked—Stadler Hurter & Co., engr., 117 W. Ste. Catherine St., Montreal, Que., 36x140 ft., concrete, brick warehouse, for Dominion Tar & Chemical Co. Ltd., Sun Life Bldg., Montreal, Que., $140,000.

SOON LETS CONTRACT—BUILDINGS

Ont., Windsor—PLANT ADDN.—Sheppard & Masson, archts. 52 Chatham St., W. Windsor, soon lets contract 81x262 ft., concrete block, steel plant addn. for Essex Wire Corp. Ltd., 1664 Windsor Ave., Windsor Ont. Approx. $110,000.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

F. R. Gibbs, Medicine Hat, Alta., CA, **$187,462**, 44 mi. distributary canals of bed widths varying from 6 to 2 feet; install 133 corrugated iron turnouts; 72 culverts; 100 standard drops and other appurtenant structures, 8 mi. south of Burdett; AL $155,850, 65 mi. distributary canals of bed widths from 6 to 2 feet; install 121 corrugated iron turnouts, 66 culverts, 92 standard timber drops and other appurtenant structures 7 mi. south of Grassy Lake, ALBERTA. Province of Alberta, Terrace Bldg., Edmonton Alta. Bids Aug. 10, awarded Aug. 17. CD 7/31.

Commonwealth Constr. Co. Ltd., Royal Bank Bldg., Winnipeg, Man., CA, **$650,000**. Concrete taxi strip at Winnipeg Airport and c. conc. parking area, WINNIPEG, MAN., Dpt. Transport, Hunter Bldg., Ottawa, Ont., Bids Aug. 2. Awarded Aug. 29. CD 7/25.

J. P. Porter Co. Ltd., 1010 St. Catherine St. W., Montreal, Que., Ga., Approx. **$66,000**, dredging in harbour BROOKLYN, N. S., Dpt. P. Wks., Hunter Bldg., Ottawa, Ont., Bids Aug. 22.

▲ Comstock Midwestern Ltd., 206 Laird Dr., Leaside, Toronto, Ont., CA, Approx. **$9,000,000**. Oil pipe line 185 mi. from Sarnia to Toronto via London and Hamilton, 125 mi. 12 in. and 60 mi. 10 in. welded steel pipe. ONTARIO. Imperial Oil Ltd., 56 Church St., Toronto, Ont. Bids Aug. 24, awarded Aug. 29. CD 8/22.

†. Robideaux, Sorel, Que., Ca, Approx. **$45,000**, dredging in harbour, BELLEVILLE, ONT. Dpt. P. Wks., Hunter Bldg., Ottawa, Ont. Bids Aug. 22.

▲ Russell Constr. Co., Ltd., Harbor Commission Bldg., Toronto, Ont., Ca, **$1,500,000** waterworks expansion, 1 story 90x10 ft. filtration plant, 110x240 ft. mixing basin, NEW TORONTO, ONT. New Toronto Public Utilities Comm., 874 Lake Shore Rd. New Toronto, Ont. Bids July 23, awarded Aug. 24. CD 7/5.

Standard Paving Co. Ltd., Front St., Hull, Que., CA Approx. **$60,000**, wid'n., paving Wellington St. from 38 to 48 ft. between Holland and Western Aves., OTTAWA, ONT. City, Ottawa, Ont. L. Hunter, c/o owner, engr.

▲ H. J. McFarland Constr. Co. Ltd., Talbot St., Picton, Ont., CA, Approx. **$1,000,000**. 200x6,000 ft. concrete hard surface runway at airport, TORONTO, ONT., Dpt. Transport, Hunter Bldg., Ottawa, Ont. Bids Aug. 7. CD 7/30.

Sam Cosentino Ltd., 77 Ritchie Ave., Toronto, Ont., LB, **$83,000**, 1,359 ft. 54 in. and 1,249 ft. 48-in. storm sewer, TORONTO, Ont. Scarborough Twp., 2001 Eglinton Ave., East, Toronto, Ont. Bids Aug. 13. CD 8/3.

QUEBEC—Province of Quebec, Quebec City **Paul Boucher**, Henryville, Que., CA, **$60,000** rein.-con. bridge over River aux Brochets, Stanbridge.

Louis B. Magil Co., 5275 Queen Mary Rd., Montreal, Que., Ca Approx. **$450,000**, central heating plant, at R.C.A.F. Station, ST. HUBERT, QUE. Defense Constr. Ltd., 1247 Guy St., Montreal, Que., M. P. McAndrews, c/o owner, engr.

QUEBEC—Dpt. P. Wks., Quebec City (Prov. Govt.) Cornier Lee, Route St. Albert, Victoriaville, Que., CA, **$254,000**, bridge over River Nicolet, St. Clothilde. G. Girardins, c/o owner, engr.

BUILDINGS

LOW BIDS AND CONTRACTS

C. H. Whitham Ltd., 217 Bamlett Bldg., Calgary, Alta., CA, **$315,000**. 3 story, steel frame, re.n.-con. main TELEPHONE EXCHANGE ADDN. CALGARY, ALTA. ALBERTA Government Telephones, Edmonton, Ita. Bids July 31. CD 7/26, awarded 8/15.

G. A. Baert, 314 Dawson Rd., Winnipeg, Man., CA, **$738,646**, WAREHOUSE and office bldg., Ellice Ave. at Stratcona St., WINNIPEG, MAN. McLeod's Ltd., 125 Higgins Ave., Winnipeg, Man. Awarded Aug. 29. CD 5/25.

Bradford-Hoshal Ltd., 1170 Yonge St., Toronto, Ont., CA, **$350,000**. First two units rental FACTORY Set up on 45-acre site, 1 and 2 story each unit 35,000 sq. ft., steel, concrete, brick, AJAX, ONT. Slough Estates Ltd., c/o Marani & Morris, 1250 Bay St., Toronto, Ont. John H. Ross, 1251 Yonge St., Toronto, Ont., engr. Bids July 11, awarded Aug. 28. CD 7/3.

▲ Foundation Co. of Canada, Ltd., 1900 Sherbrooke St., W., Montreal, Que., CA, Approx. **$30,000,000**. Atomic reactor PLANT at atomic development here. CHALK RIVER, ONT. National Research Council, Sussex St., Ottawa, Ont. CD 4/9.

Robertson Constr. & Engr. Co., 512 Clifton Ave., Niagara Falls, Ont., CA, **$250,000**, concrete work railway REPAIR SHOP FORT ERIE ONT. Canadian National Rys., Union Station, Toronto, Ont. Bids June 14, awarded Aug. 28. CD 6/8.

▲ Fraser-Brace Eng. Co. Ltd., 360 St. James St. W. Montreal, Que., CA, Several million, chemical PLANT between here and Brockville, Ont., on St. Lawrence River front, PRESCOTT, ONT. Canadian Industries, Ltd., Nylon Div., 1135 Beacon Hall Hill, Montreal, Que. CD 6/9.

▲ Horton Steel Works Ltd., 40 Jennet St., Fort Erie, Ont., and **Toronto Iron Works Ltd.**, 629 Eastern Ave., Toronto, Ont., CA erecting 30 steel tanks, 150,000 barrels each, 150. ft. diam., 48 ft. high oil REFINERY EXPANSION, SARNIA, ONT. Imperial Oil Ltd., 56 Church St., Toronto, Ont. Awarded Aug. 20. CD 11/17.

Paul Boucher, Henryville, Que., CA, **$200,000**, refrigeration WAREHOUSE, FARNHAM, QUE. Apple Co-operative of Quebec c/o Mark Hudon, Farnham, Que.

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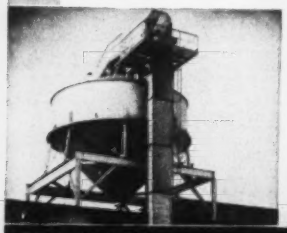

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▲ **E. B. Badger & Sons**, 50 W. King St., Toronto, Ont., design and construct, Approx. $2,000,000. PLANT ADDN., MONTREAL EAST, QUE. Dominion Tar & Chemical Co. Ltd., Sun Life Bldg., Montreal, Que.

Louis Donalo, Inc., 8320 St. Lawrence Blvd., Montreal, Que., CA, Approx. $500,000. 1 and 2 story, 170x300 ft. rein.-con. fdns., brick and block, glass block, packing and storage PLANT and OFFICE, Ferrier St. between Goodrich and Cockshutt Plants., MONTERAL, QUE. Watt & Scott (Montreal) Ltd., 78 Bresoles St., Montreal, Que., Luke & Little, 1515 Crescent St., Montreal, Que., archts.

Pentagon Constr. Co. Ltd., 1225 Bishop St., Montreal, Que. CA, Approx. $750,000, 1 story, 210x240 ft., structural steel, rein.con. brick block PLANT and 40x210 ft. OFFICE, 40x80 ft. SERVICE BLDG., Cote de Liesse Rd., MONTREAL, QUE. Sperry Gyroscope Co. of Canada, Ltd., 674 Dorchester St. W., Montreal, Que. CD 6/27.

▲ **J. P. Porter Co. Ltd.**, Dominion Square Bldg., Montreal, Que., CA, Approx. $1,000,000, 800 ft. rein.-con. wharf to join wharf presently being constructed by federal Dpt. P. Wks., SEVEN ISLANDS, QUE. Quebec North Shore and Labrador Ry. Co. Ltd., 810 Cote de Liesse Rd., Montreal, Que., Stone & Webster (Canada) Ltd., 50 King St. W., Toronto, Ont. engrs.

Francois Marquis & Fils, Ltd., 177 Cremazie St., Quebec City, Que., CA, Approx. $300,000, 4 story, 53x170 ft., rein.-con. stone, brick ORPHANAGE WING, SULLY, QUE. Les Rev. Cleres de St. Viateur, Sully, Que. CD 6/28.

P. W. Graham & Sons Ltd., Imperial Bldg., Moose Jaw, Sask., CA, $100,000 ROUND HOUSE and machine shop, PRINCE ALBERT, SASK. Canadian National Rys., V. L. Charles, ch. engr., Winnipeg, Man. Bids July 23. CD 7/9.

PROPOSED PROJECTS

WATER SUPPLY

Ga., East Point—City c/o city clk., City Hall, bond election Sept. 25, WW Imprvs., $400,000.

Mich., East China—East China Twp., Town clk., water sys. incl. filtration plant, pumping station, $125,000.

O., Sylvania—Village, Harold A. Stapleton, chn., Bd. Pub. Affairs, water imprvs., incl. 100,000 gal. storage tank, new mains, standby power equip. at treatment plant, etc., $125,000.

Tex., Abilene—City, A. P. Hancock, city mgr., filter plant exten., $300,000. Freese & Nichols, 407 Daniger Bldg., Fort Worth, consult. engrs.

Tex., Dallas—Dallas County Water Control & Imprv. Dist. 6, Court House, water supply proj., distr. sys. in southeast sect. of county, $225,000. Jack Davis, county engr.

Tex., Houston—Harris County Water Control & Imprv. Dist. 30, c/o Boyd N. Hill, Court House, WW., $150,000.

Tex., Kennedale—City, c/o B. T. West, mayor, Kennedale, WW sys., $100,000. Freese & Nichols, 407 Danciger Bldg., Fort Worth, consult. engrs.

Tex., LaGrange—City, water treatment plant, $70,000; water supply well, $35,000; c.i. distr. pipe lines, $40,000. The Marvin Turner Engineers, Nalle Bldg., Annex, Austin, consult. engrs.

Tex., Mesquite—City, water treatment plant, $125,000, Homer A. Hunter, 4707 Greenville Ave., Dallas, consult. engr.

Tex., San Antonio—City, Dpt. City Water Bd., 106 W. Market St., general rehabilitation of water lines throughout the sys., $90,000; water distr. lines, laterals in north and east areas, $85,000; south and west areas, $75,000; c.i. or concrete water mains, South side, $100,000; on North side, $75,000; addnl. large water supplying pumping station, on West side, $42,500; drilling addnl. water supply wells in area of Artesia St. site, $90,000; large water pumping station, East side at Artesia St. site, $40,000; artesian water supply well, north of Commerce St., electrically equipped, for pumping, with standby gas engines, $35,000; artesian water supply well, electrically equipped for pumping with stand-by gas engines near 34 St., $35,000. W. D. Masterson, c/o owner, engr. CD 8/3/50.

Tex., Sinton—City, voted bonds, Proj. 1, 500,000 gal. elevated tank, $65,000; Proj. 4, WW rehabilitation, $100,000; Proj. 5, c.i. water lines exten., $130,000. Frank T. Drought, 117 W. Pecan St., San Antonio, consult. engr. CD 8/3.

Tex., Tyler—City, voted bonds, completion of water filtration plant, $200,000. J. P. Ferrill, city engr. CD 8/10.

Wash., Winslow—Town, Town Hall, water system, $130,000.

Ont., Sarnia—City, Municipal Bldg., Sarnia, waterworks expansion at Point Edward incl. electrical pump to produce 360,000 gallons per hour, $200,000. James F. McAlaren Assocs., 705 Yonge St., Toronto, Ont., consult. engrs. W. C. Greenwood, City engr. CD 1/24/47.

SEWERS, WASTE DISPOSAL

Calif., Brea—City Council, 401 S. Pomona Ave., sewage treatment plant addn., $140,000. Ralph S. McLean, Jeroens Bldg., Long Beach, consult. engr.

▲ **Calif., Redondo Beach**—City, Council, 1223 Emerald St., Phase II and III of the sanitary sewer system in North Redondo, $1,211,313. Frank C. Nybe, city engr. CD 9/13/49.

Conn., Portland—Town Sewer Comn., Portland, sewage treatment plant, $107,548. Gibbs & Hill, Inc., Pennsylvania Station, New York, N. Y., consult engr.

Ida., Weiser—City, City Hall, treatment plant, $120,000. Carey & Kramer, 1917 1 Ave., Seattle, Wash., consult. engrs.

▲ **Mass., Boston**—City, Pub. Wks. Dpt., City Hall Annex, incinerator, Wexford St., Brighton, $704,000; incinerator, Victory Rd., Dorchester, $660,000; incinerator, Barry's Ledge, Gardner St. and Victory Rd., Hyde Park, $770,000; incinerator, Massachusetts Ave. and Southampton St., Roxbury, $1,650,000; incinerator, Gardner St., West Roxbury, $550,000, Thomas Worcester, Inc., 84 State St., consult. engr. CD 8/10.

Mass., West Springfield—Town, Bd. Selectmen, 126 Park St., storm water sewer sys., $500,000. Tighe & Bond, 189 High St., Holyoke, consult. engrs.

Tex., Houston—V. L. Evans and A. E. Bailey, State National Bldg., sanitary sewers, $75,000; storm sewers, open drainage, site earthwork, grading, $75,000 on 375 acre site, west of Winchester Place.

Tex., Houston—Harris County Water Control & Imprv. Dist. 30, c/o Boyd N. Hill, Court House, sanitary sewer sys., $100,000.

Tex., Houston—Frank M. Rentfrow, City National Bank Bldg., storm sewers, site earthwork, drainage levelling, $65,000; sanitary sewers, $60,000 off Katy and Britt Moore Rds.

Tex., Sinton—City, voted bonds, Proj. 2, sanitary sewer disposal plant, $150,000; Proj. 3, sanitary sewer lines, $135,000. Frank T. Drought, 117 W. Pecan St., San Antonio, consult. engr. CD 8/3.

N. S., Sydney—City, R. MacPherson, city clk., sewer sys. extens., Approx. $60,000 and water sys. Approx. $40,000.

Ont., St. Thomas—City, sewage disposal plant serving city and Ontario Hospital 2 mi. south, incl. installation of booster pump in St. George St. Approx. $100,000. Gore & Storrie, 1130 Bay St., Toronto, engrs., W. C. Miller c/o owner, engr.

BRIDGES

Fla., Ormond Beach—Volusia County Bd. of Comr., Deland, new bridge across Halifax River at Ormond Beach, $800,000. Reynods, Smith Hills, 227 Park St., Jacksonville, Fla., consult. engr. CD 11/16.

Kan., Newton—Harvey Co., bridge on W. Emman Creek, $75,000; concrete girder bridge on Little Arkansas River, $80,000, Paul Newcomer, co. engr., R. S. Delamater, Derby Bldg., Wichita, consult. engr.

Kan., Winfield—Cowley Co., bridge on Grouse Creek, near Cambridge, $65,000; bridge on Silver Creek, $65,000. R. S. Delamater, Derby Bldg., Wichita, consult. engr., Crawford Stevens, co. engr.

▲ **La., Covington**—St. Tammany Parish Police Jury, Covington, $40,000,000 bond election Sept. 18, causeway across Lake Pontchartrain.

▲ **MICHIGAN**—State Hy. Comn., 213 S. Capitol Ave., Lansing,

Wayne Co.—overpasses, grade separation proj. planned on Grand River at Vernor, Livernois, Greenfield, Southfield and Warren, est. $4,000,000 to $5,000,000. Harry C. Coons, ch. engr.

▲ **PENNSYLVANIA**—State Hy. Dpt., 506 N. Office Bldg., Harrisburg,

Beaver Co.—construct bridge over the Ohio River between Aliquippa and Baden, $5,000,000. E. L. Schmidt, c/o owner ch. engr.

▲ **PENNSYLVANIA**—State Hy. and Bridge Auth., North Office Bldg., Harrisburg,

Fayette Co.—bridge over Youghogheny River at Connellsville and approaches, $2,500,000.

Washington and Westmoreland Counties—construct 2.43 mi. of approaches to Belle Vernon Bridge, $3,500,000. S. P. Longstreet, c/o owner, ch. engr.

Quebec—Province of Quebec, Quebec City, St. Jerome—bridge over North River, $180,000. O. Desgardins, Dpt. P. Wks., Quebec City, engr.

STREETS AND ROADS

Kan., Topeka—City, street repairs, $200,000. W. E. Briscie, city engr.

Okla., Oklahoma City—City Hall, wid'n. and asph. pavement E. 8 from Stiles to Eastern Sts., $275,000; asph. pavement N. W. 39 from Classen to McArthur Ave., $300,000. H. E. Chase, city engr. CD 5/15/50.

▲ **PENNSYLVANIA**—State Hy. and Bridge Auth., North Office Bldg., Harrisburg,

Chester Co.—construct Route 100 by-pass around West Chester, $1,650,000.

Dauphin Co.—construct 3.03 mi. of Harrisburg bypass as Pennsylvania Turnpike feeder between Colonial Park and Oakleigh, $1,500,000.

Montgomery Co.—construct Norristown by-pass as Pennsylvania Turnpike feeder road from northeast of Norristown to Turnpike Terminal at King of Prussia 8.53 mi. $5,000,000. S. P. Longstreet, c/o owner, ch. engr.

Tex., Tyler—City, voted bonds, 19 units street paving, $200,000. J. P. Ferrill, city engr. CD 8/10.

▲ **Saskatchewan**—Province of Sask., Regina, Sask., completion of highway, Nipawin to Flin Flon, 84 mi. $1,500,000. CD 10/1/45.

EARTHWORK, WATERWAYS

▲ **Oregon**—Portland General Electric Co., Electric Bldg., Portland, Ore., construct dam on Deschutes River at Round Butte location below confluence of Metolius and Crooked Rivers, $37,250,000. Preliminary FCC permit sought.

AIRPORTS

▲† **Colo., Denver**—TECHNICAL TRAINING, etc.—U. S. Eng., 1609 Jackson St., Omaha, Nebr., four 191,000 ft. technical training bldgs., $2,674,000; 48,000 sq. ft. laundry and dry cleaning bldgs., $1,152,000; warehouse, operations, training aids, flexible gunnery training, sight.ng station at O. G. Range, Guard House, all at Lowrey Air Force Base, $1,209,000. Patrick D. Horgan, 1170 Elati St., Denver, Colo., consult. engr. CD 8/17.

▲ **Mich., Detroit** — AIRPORT — Detroit-Wayne Major Airport, Charles G. Oakman, chn., Middlebelt and Expressway St., Wayne County Airport Comn., $8,000,000 bond issue referendum voted in November, passenger terminal facilities, admin. bldg. admin. CD 6/7.

▲† **Mich., Sault Ste Marie**—AIR FORCE BASE—U. S. Eng., 2,13 Cadillac Tower, planned constr. at Kinrose Field, incl. fuel storage, dispensing facilities, housing operation, aircraft maintenance, troop training, admin., hangars, utilities, medical facilities, storage bldgs. and shops. $6,166,000.

▲† **N. M., Alamogordo**—Air BASE—U. S. Eng., Box 1538, Albuquerque, Holloman Air Force Base addnl. constr $o,147,000.

▲ **N. M., Albuquerque**—AIR BASE CONSTRUCTION—U. S. Eng., Box 1538, Kirtland Air Force Base addnl. const. $8,540,000.

▲† **N. M. Roswell**—AIR BASE—U. S. Eng., Box 1538, Albuquerque, Walker Air Force Base addnl. constr. $13,111,000. CD 3/13.

R. I., Hillsgrove—AIRPORT—State, State House, Providence, airport imprvs., extens. of runways, aircraft parking and apron. $198,000.

S. D., Deadwood—AIRPORT—City, airport. $140,000.

▲† **Tex., Harlingen**—AIR FORCE BASE—U. S. Eng., 606 Santa Fe Bldg., Galveston, plans by Herman G. Cox, N. P. Anderson bldg., Fort Worth and Sigler, Clark Winston, Baxter, Weslaco, construct new air force base. $14,000,000. CD 6/26.

▲† **Tex., San Angelo**—Air BASE—U. S. Eng., 1127 Texas and Pacific Bldg., Fort Worth, administration and academic $350,000; warehousing and storage, $250,000; airfield pavement, $763,000, at Goodfellow Air Force Base. CD 6/27.

▲ **Utah, Salt Lake City**—AIRPORT—Salt Lake City Corp., c/o Irma Bitner, recorder, City and County Bldg., construct 8,000 ft. runway and other imprvs. at Salt Lake Airport No. 1, $2,454,904. Roy McLeese, c/o owner, city engr. CD 3/18/48.

▲† **Tex., Corpus Christi**—AIRPORT FACILITIES—U. S. Govt., Navy Dpt., Naval Base, airfield paving, runways, taxiways, $1,760 000; lighting, $100,000; fuel dispensary sys., $125,000; hangars, $35,000; shop, $150,000; administrative and operational, $350,000 at Chase Field, Naval Auxiliary Air Station.

Wis., Appleton—RUNWAY—Outagamie Co., Appleton, 3750 ft. long and 200 ft. wide, runway at airport. $139,700. Foth & Porath Inc., 409 E. Walnut St., Green Bay, Wis., consult. engr.

LATIN AMERICA

Mexico, Jalapan—Petroleos Mexicanos, Muarez, 104, Mexico City, plans sulphur extraction plant. $150,000.

Mexico, Mazatlan—National Railroad Workers Union, Hidalgo, 59, Mexico City, plans 400-house colony for railroad workers. $3,0,000.

▲ **Mexico, Mexico City**—Diesel Nacional, Mexico City, plans truck bldg. plant, mfg. Italian Fiat trucks. $7,300,000.

Mexico, Tampico—Sria de Communicaciones y Obras Puolicas, Mexico City, plans "El Moralillo" bridge, 130 meters long, over Tamesis River, 45 tons of structural steel to be used. $350,000.

PUBLIC BUILDINGS

▲† **Calif., El Tora**—HOSPITAL—U. S. Navy, El Toro Marine Corps Base, plans by Albert C. Martin & Assocs., 333 S. Beaudry St., Los Angeles, Calif., 82-bed reinf.-con. hospital, $1,000,000. Thos. B. McGloshen, c/o owner, engr.

Del, Smyrna—SCHOOL—Smyrna Special School Dist., Smyrna, plans by G. Morris Whiteside 2nd. Du Pont Bldg., Wilmington elementary school South and Pearl Sts. $320,000. Robert P. Schoenijahn, Industrial Trust Bldg., Wilmington, consult. engr. CD 7/28/50.

▲ **Fla., Clearwater**—SCHOOL—Pinellas Co. Bd. P. Instruction 305 Haven St., Clearwater, Fla., plans by Phillip F. Kennard, 105 2 Ave. N. E., St. Petersburg, Fla. Jun.or and Senior High School of Negroes, $1,000,000. CD 10/18/46.

▲ **Fla. Gainesville**—MEDICAL CENTER—State Improvement Comn., Tallahassee medical center and nurses home at University of Florida, $15,750,000.

Ga., Lincolnton—HIGH SCHOOL—City, plans by David S. Cuttino & Assoc., Mortgage Guarantee Bldg., Atlanta, Negro High School. $300,000.

Idaho, Moreland—HIGH SCHOOL—School Bd., plans by C. A. Sundberg & Assoc., Box 556, Idaho Falls, high school. $340,000.

Ill., Bethalto—SCHOOL ADDN.—Bethalto Community Unit No. 8, of Madison Co., Wilburn R. Trimpek, general supt. of Schools, plans by S. T. Pabst & Assocs., Goldman Bldg., East St. Louis, community high school addn. $459,600. CD 7/3.

▲ **Ind., Fort Wayne**—PARKING GARAGE, etc.—Bd. P. Wks., Fort Wayne, plans by A. M. Strauss, Strauss Bldg., Fort Wayne, off street parking facilities, incl. 2 parking lots, 2 story parking garage on Berry St. between Clinton and Barr Sts., Approx. $1,000,000. CD 1/4.

Ia., Sigourney—HOSPITAL—Keokuk Co., voted $200,000 bonds, hospital. $325,000.

▲ **Kan., Wichita**—SCHOOL—Bd. Educ., cancelled bids to have been opened Aug. 13, Charles Curtis Intermediate School, $1,100,000, Hibbs & Robinson, 519 S. Broadway, archts. CD 7/31.

Ky., Buckner—SCHOOL—Oldham Co., Bd. Educ., La Grange plans by W. G. Crawford, 4030 Alton Rd., Louisville, rural school. $350,000.

▲† **Ky., Fort Campbell**—BUILDINGS—U. S. Eng., 830 W. Broadway, Louisville, plans by J. Stephen Watkins, 145 E. High St., Lexington, 63 permanent type buildings, $34,688,000. CD 7/19.

La., Bossier City—HOUSING—Bossier City Housing Auth., 70 housing units. $575,000.

Mass., Beverly—SCHOOL—City, School Bldg., Comn., 2 Essex St., plans by Leland & Larsen, 24 Statler Bldg., Boston, junior high school. $300,000.

▲ **Mass., Cambridge**—HOUSING—Cambridge Housing Auth., 1416 Mass. Ave., plans by Desmond & Lord, 6 Beacon St., Boston, 350 housing units, $3,000,000. CD 1/26/50.

▲ **Mass., Lynn**—HOUSING—City of Lynn Housing Auth., 58 Andrew St., plans by Desmond & Lord, 6 Beacon St., Boston, 175 housing units, proj. $2,000,000. CD 7/5.

▲ **Mass., North Andover** (Ind. Br. Lawrence)—SCHOOL—Town, Supt. Schools, 120 Main St., plans by Adden, Parker, Clinch & Crimp, 177 State St., Boston, high school $1,500,000.

Mass., Weymouth—SCHOOL—Town, Supt. Schools, 89 Middle St., plans by Harry J. Korslund, 506 Washington St., Norwood, 1 story, 60x280 ft. elementary school. $300,000. CD 1/12.

▲† **Mich., Detroit**—PLANT—Dpt. Navy, 18 St. and Constitution Ave. N.W., Wash. 25, D. C., mfg. plant to make jet aircraft engines on 310 acre site on Van Dyke Rd., $90,000,000. Chrysler Corp., 1220 E. Jefferson St., will operate.

Mich., Edwardsburg—SCHOOL—School Bd., voted $340,000 bonds Aug. 23, brick, masonry elementary school. $340,000.

Minn., Chaska—SCHOOL—Bd. Educ., Mrs. Eleanor Salden, clk., voted $350,000 bonds Aug. 14, grade school addns., high school addn., remodel existing bldg., H. H. Swanson, 500 Sexton Bldg., Minneapolis, archt. CD 6/4.

Minn., Cottonwood—SCHOOL—Bd. Educ., E. E. Olson, supt., $625,000 bond election Sept. 12, high school and remodel existing bldg., Magney, Tusler & Setter, 202 Foshay Tower, Minneapolis, archts. CD 5/2.

Minn., St. Paul—SCHOOL—Bd. Educ., F. E. Conner, supt., plans by Bettenburg, Townsend & Stoite, 1437 Marshall Ave., St. Paul Eastern Heights Grade School addn., 2000 Margaret St., $300,000. CD 10/30.

▲ **Neb., Omaha**—HOSPITAL—State Bd. Control, University of Nebraska, Lincoln, construct psychiatric addn. to University of Nebraska College of Medicine hospital. $1,400,000. C. F. Botsford, c/o owner, engr. CD 8/23.

▲† **N. M., Gallup**—ORDNANCE DEPOT—U. S. Eng., Box 1538, Albuquerque, addnl. constr. at Fort Wingate Ordnance Depot. $3,299,000.

▲† **N. M., Las Cruces**—ADDNL. CONSTRUCTION—U. S. Eng., Box 1538, Albuquerque, addnl. constr. at White Sands Proving Grounds, $6,893,000.

▲ **N. Y., Jamaica**—HOUSING—New York City Housing Auth., 63 Park Row, New York Zone 7, plans by Hart, Jerman & Assoc., 247 Park Ave., New York Zone 17. Housing Proj., South Jamaica II, 8 seven-story bldgs. and 8 three-story bldg. for 600 families on 16 acre site bounded by South Rd., Brinkerhoff Ave. and Long Island R. R., $7,500,000. CD 9/8.

O., Ashtabula—ARMORY—Ohio National Guard, Fort Hayes, Columbus, armory on State Road to house two units, $350 000.

▲ **Ore., Salem**—SCHOOL—School Dist., $3,000,000 bond election authorized for Senior High School, Freeman, Hayslip & Tuft, 2040 S.W. 3 St., Portland, archts.

▲ **Pa., Blooming Glen**—HIGH SCHOOL—Penn Ridge Consol dated School Dist., plans by A. E. Mickleswright, 72 Ewing St., Trenton N. J., Junior High School. $1,500 000. CD 10/22/45.

Pa., Munhall—SCHOOL—School Dist. of Munhall, Munhall, plans by D. Roderick Jones, 135 E. 8 St., Homestead, 1 and 2 story, brick on tile, Woodlawn Grade School. $500 000.

▲ **R. I., Kingston**—AGRICULTURAL BLDG.—State, State House, Providence, agricultural bldgs., Rhode Island University. $1,000,000.

▲ **Tenn., Paris**—HOMES—Paris Housing Auth., Paris, plans by J. Frazer Smith, Goodwyn Inst. Bldg., Memphis, 150 homes, $1,200,000.

Tex., Abilene—HIGH SCHOOL—Abilene Independent School Dist., Abilene, Negro High School. $300,000. CD 6/2/50.

▲ **Tex., Burnet**—HOTEL—State Planning & Resources Bd., c/o Motoron R. Harrison, State Capitol Bldg., Oklahoma City, Okla., plans by Dow Gumerson, Bass Bldg., Enid, Okla., resort hotel at Inka Lake, near here. $1,000,000.

Tex., DeKalb—SCHOOL—DeKalb Independent School Dist., DeKalb, plans by Wyatt C. Hedrick, 904 Fort Worth Ave., Dallas, 16,000 sq. ft., haydite block and brick elementary school. $300,000. CD 3/23.

▲† **Tex., Fort Hood**—BUILDINGS, U. S. Eng., 606 Santa Fe Bldg., Galveston, 3 frame regimental and battalion headquarters bldgs. $2,750,000; 3 frame regimental and battalion storehouses, $1,350,000; several frame company admin bldgs. $750,000; frame motor repair shops; $700,000; frame classrooms bldg. units, $850,000; frame recreational bldgs., $350,000; frame storehouses, $400,000; service area, incl. 32 grease racks, $150,000; construct addnl. structures, $700,000. Wyatt C. Hedrick, 5201 Fannin St., Houston, engr. and archt. CD 8/14.

▲ **Tex., Mineral Wells**—HOTEL—State Planning & Resources Bd., c/o Motoron R. Harrison, State Capitol Bldg., Oklahoma City, Okla., plans by Dow Gumerson, Bass Bldg., Enid, Okla., resort hotel at Possum Kingdom State Park. $1,000,000.

Tex., Port Arthur—HIGH SCHOOL—Port Arthur Independent School Dist., Port Arthur, plans by Mark Lemmon, Tower Petroleum Bldg., Dallas, 2 story Thomas Jefferson High School addn. $500,000.

Tex., Rockport—SCHOOL—Rockport Independent School Dist., plans by Evans & Abbott, Bevle Bldg., Corpus Christi, high school, $325,000. CD 8/15.

Tex., Sinton—MUNICIPAL BLDG.—City, Proj. 6, municipal bldg., $300,000. Frank T. Drought, 117 W. Pecan St., San Antonio, consult. engr. CD 8/23.

Tex., Snyder—COURT HOUSE—Scurry Co., Edgar Taylor, judge Snyder voted bonds, masonry court annex. $350,000. CD 8/3.

Wash., Forks—SCHOOL—Quillayute School Dist., Forks, plans by W. A. Johnson & Assocs., 1 National Bank Bldg., Everett, elementary school. $300,000.

Wash., Sumner—PHYSICAL EDUCATION—School Dist. 320, Sumner, plans by Lean, Pearson & Richards, Tacoma Bldg., Tacoma, Wash., physical education bldg., $400,000. CD 11/14/45.

Wyo., Cody—HIGH SCHOOL—Bd. Educ., Cody, plans by Treslar-McCall & Assoc., 507 16 St., Cody, 2 story brick high school. $500,000.

Ont., Collingwood—SCHOOL—Collingwood Area High School Bd., Collingwood, high school $400,000.

Ont., Exeter—HOSPITAL—South Huron Hospital Committee, Elmer D. Bell, Exeter, brick hospital, $330,000.

Ont., Hawkesbury—HIGH SCHOOL—Hawkesbury and District High School Bd., Hawkesbury, plans by H. H. Roberts, Westport, 240x323 ft., steel, reinf.-con. high school and double gymnasium, Approx. $450,000.

▲ **Ont., Toronto**—NURSES RESIDENCE—Toronto General Hospital, 101 College St., Toronto, Ont., plans by Mathers & Haldenby, 15 St. Mary St., Toronto, nurses residence at Wellesley Place, $1,300,000.

Que., Granby—POST OFFICE—Secy., Dpt. P. Wks., Hunter Bldg., Ottawa, Ont., plans by Rene & G. Charbomean, 6260 Cote des Neiges Rd., Montreal, Que., 2 story, bsmnt., 87x166 ft., rein.-con. post office at corner of Main and St. Antoine Sts., Approx. $600,000.

COMMERCIAL BUILDINGS

▲ **Calif., Los Angeles**—HOTEL—M. Linde, A. Litrov, F. N. Howser, J. E. Sisson, E. H. Sweet, c/o Paul R. Williams, archt., 3757 Wilshire Blvd., Los Angeles, 200-room hotel at the Los Angeles International Airport. $1,500,000.

▲ **Calif., Richmond**—DWELLINGS, SHOPPING CENTER—Parr-Richmond Industrial Corp., Fred D. Parr, pres., 600 S. 4 St., 4,000 dwellings, modern shopping center on 2,625 acres north of Berkeley and east of El Cerrito Canyon. $70,000,000.

Colo., Denver—LIBRARY—Denver Medical Society, Dr. Nolie Mumey, chn. of bldg. comn., 1620 Court Place, Denver, Colo., 2 story, 14,000 sq. ft. medical library bldg., $500,000. C. Francis Pillsbury, 320 Midland Savings Bldg., Denver, Colo., consult. engr. CD 11/28/45.

▲ **Ill., Skokie**—OFFICE—All State Insurance Co., Arthington and Kedzie Sts., Chicago, 70,000 sq. ft. office bldg., $1,000,000.

Ia., Mount Pleasant—DORMITORY—Iowa Wesleyan College, Mount Pleasant, plans by W. M. Ingemann & M. V. Berostedt, 345 Minneapolis St., St. Paul, Minn., girls dormitory, $575,000. CD 9/8/50, under LB.

▲ **Kan., Baldwin City**—BUILDINGS—Baker University Redevelopment Comm., Dr. Nelson P. Horn, pres., Baldwin City, plans by Griest & Eckdall, New England Bldg., Topeka, auditorium and new buildings, $3,000,000. CD 6/19.

▲ **Ky., Fort Knox**—STORE AND SHOPPING CENTER—Mdses. Mortgage & Finance Co., 2545 3 Third St., Louisville, department store and shopping center, $2 000 000.

N. Y., Brooklyn—OFFICE—Centramed Bldg. Inc., 9 Lafayette St., Brooklyn, plans by Charles B. Meyers, Assocs., 31 Union Square, New York, 3, N. Y., 2 story office at 345 Schermerhorn St., $300,000.

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▲ **N. Y., Brooklyn**—POST OFFICE—Mayon Realty Corp., 38 W. 32 St., New York 1, N. Y., plans by H. I. Feldman, 415 Lexington Ave., New York 17, N. Y., 2 story post office at 118-36 Second Ave. and 50-112 Tenth Ave. $1,600,000.

N. Y., New York—CHURCH—Greater New York Calvary Baptist Church, 52 W. 111 St., Zone 26, plans by Joseph Judge, 110 E. 42 St., Zone 17, church, 22-33 W. 124 St., $300,000.

N. Y., New York—APARTMENT—Lespete Constr. Co., 51 Buchanan Pl., Zone 53, plans by H. Herbert Lilien, 201 W. 72 St., Zone 23, 6 story apartment on east side of Briggs Ave., south of 201 St. $400,000.

N. Y., Queens Village—AUDITORIUM, SCHOOL—Roman Catholic Church of North American Martyrs, Peck Ave. and Union turnpike, plans by Beatty & Berlenbach, 32 Court St., Brooklyn, Zone 2, 1 story auditorium and school at Peck Ave., northwest corner Union Turnpike. $400,000.

▲ **Pa., Phila.**—APARTMENT—Max E. Cohen, Market St. National Bank Bldg., Phila., Pa., apartment bldg., Parkway and 24 St., $5,000,000.

Pa., Phila.—SHOPPING CENTER—Alfred P. Orleans, Front and Rockland Sts., Phila., shopping center, Castor Ave., Cottman Ave., etc. $300,000; shopping center, Bustleton Ave. $300,000; shopping center Bradford St., Approx. $300,000.

Tex., Angleton—DWELLINGS—A. J. Whipple & Assoc., 4015 Fernwood St., Houston, plans by Knostman & Webster, 2017 W. Gray St., Houston, Sec. 1, 23 masonry dwellings in Chevy Chase homesite area, $300,000; Sec. 2, 22 dwellings, 10 duplexes of Chevy Chase, $360,000; 54 dwellings, $375,000.

Tex., Georgetown—SCIENCE BLDG.—Southwestern University, c/o Dr. I. J. McCook, bus. mgr., Georgetown, plans by Cameron Fairchild, 2626 Westheimer Rd., Houston, 2 story, rein.-con., 25,920 sq. ft. science bldg., $475,000, Walter P. Moore, 4605 Montrose St., Houston, consult. engr. CD 2/17/46.

▲ **Tex., Houston**—BANK—Houston Bank & Trust Co., 119 Main St., bank and office. $4,000,000.

▲ **Ont., Toronto**—HOSPITAL—Seventh Day Adventists, G. E. Jones, chn. hospital committee, P.O. Box 337, Oshawa, 100-bed brick, steel frame, concrete block hospital in northwest area, near Bathurst St. and Finch Ave., $1,000,000.

INDUSTRIAL BUILDINGS

▲ **Ill., Chicago**—WAREHOUSE—Hillmans Pure Food Stores, 28 W. Washington St., Chicago, 2, Ill., 130,000 sq. ft., food warehouse, 10,000 sq. ft. of this refrigerated, at Pulaski and 43 Sts., Zone 32, $1,500,000. A Epstein & Sons Co., 2011 Pershing Rd., Chicago, 9, Ill., consult. engrs.

▲ **Ind., Gary**—MILL—U. S. Steel Co., Lake Front, sheet and tin mill modifications, control room addns., $1,400,000. United Eng. & Constr. Co., 1041 Arch St., Phila., Pa., engrs. CD 2/6/45.

▲ **Ia., Council Bluffs**—POWER PLANT—Iowa Power & Light Co., 312 6 St., Des Moines, power plant, Approx. $5,000,000. Black & Veatch, 4706 Broadway, Kansas City, Mo., consult. engrs. CD 5/16/49.

▲ **Ky., Brandenburg**—PLANT—General Aniline & Film Corp., 405 Lexington Ave., New York, N. Y., chemical plant on 100 acres, $2,000,000.

▲ **La., New Orleans**—PLANT—Freeport Sulphur Co., Freeport, sulphur mining plant at Garden Island Bay in marshes of lower Mississippi Delta, $15,000,000.

▲ **Md., Hagerstown**—PLANT—Fairchild Aircraft, Div. Fairchild Engine & Airplane Corp., Hagerstown, plans by Fordyce & Hamby, Inc., 29 W. 57 St., New York 19, N. Y., 165,000 sq. ft. plant addn., 150x250 ft. hangar, warehouse, paint storage bldg., boiler house, maintenance & tool storage, reclamation shops, 2 concrete storage pads, roadways and docks extending airport, $7,000,000.

▲ **Miss., Meridian**—PLANT—W. S. Dickey Clay Mfg. Co., Commerce Trust Bldg., Kansas City, Mo., pipe mfg. plant, $1,650,000.

▲ **N. J., Camden**—STATION ADDN.—Pennsylvania Railroad Co., L. P. Strubel, ch. engr., 30 and Market Sts., Phila., Pa., Broadway Station addns., and modernizing, $1,000,000. CD 8/9.

N. Y., Brooklyn—GARAGE—Benson Chevrolet, Inc., 8514 18 Ave. plans by Maxfield Blaufeux, 44 Court St., Zone 2, 1 story garage at 1553-1583 86 St. $200,000.

N. Y., New York—PARKING, etc.—Sonio Kitzes, 40 Monroe St., New York, 2, N. Y., plans by Henry George Greene, 1741 Broadway, New York, Zone 19 parking and storage bldg. at 9-13 Baxter St., $135,000.

N. Y., Woodside—FACTORY—Eric-Leonard Corp., c/o Larry Meltzer, archt., 188 Montague St., Brooklyn, Zone 2, factory and office on Barnett Ave., northwest corner of Woodside Ave. $110,000. CD 4/10/46.

Pa., Bristol—PLANT—Hunter Mfg. Co., Bristol, mfg. plant, $575,565.

▲ **Pa., Danville** — MANUFACTURING FACILITIES—Merck Co., 126 E. Lincoln Ave., Rahway, N. J., mfg. facilities $8,000,000.

▲ **Pa., Indiana**—COKE OVENS—Lucerne Coke Co., Indiana, 200,000 tons capacity coke ovens. Lucerne Mines, $2,200,000.

▲ **Pa., Pittsburgh**—RAILROAD STATION—Baltimore & Ohio R.R., A. C. Clarke, ch. engr., Baltimore 1, Md., railroad station and freight terminal, $13,000,000.

▲ **S. C., Harleyville**—PLANT—American Cement Corp., David L. Anderson, pres., Florence, S. C., 1 m. bbls capacity, cement plant. Between Holly Hill and Harleyville. $6,825,000.

▲ **Tenn., Memphis**—PLANT—Chromium Mining & Smelting Corp., Sault St. Marie, Ontario, Canada, plant. $1,000,000.

▲ **Tex., Freeport**—LABORATORIES—Dow Chemical Co., Freeport, plans by MacKie & Kamrath, 2713 Ferndale St., Houston, 8 bldg. units, 57,000 sq. ft., masonry, steel research laboratories, $2,600,000. Howard & Johnson, Scanlan Bldg., Houston, consult. engrs. CD 2/3/47.

Wyoming—RURAL DISTRIBUTION LINES—Big Horn Rural Electric Co., Basin, Wyo., 76 mi. rural distr. lines, two rau radio and completion of previously approved construction, Big Horn Co., $370,000. H. S. Nixon Eng. W.O.W. Bldg., Omaha, Nebr., consult. engr.

Alaska, Juneau—PLANT—Columbia Lumber Co., Juneau plywood plant, $800,000.

▲ **Alta., Edmonton**—PLANT—Canadian Industries Ltd. 1135 Beaver Hall Hill, Montreal, Que., chemical plant to be built east of here, in Strathcona Municipality on 300-acre site, first unit to cost, $5,000,000. Total Est. $15,000,000.

▲ **Alta., Strathcona**—PLANT—Canadian Industries Ltd. 1135 Beaver Hall Hill, Montreal, chemical plant on 300 acre site. Approx. $2,000,000.

▲ **B. C., Burnaby**—REFINERY EXPANSION—Standard Oil Co. of British Columbia, 906 Marine Bldg., Vancouver, B. C. oil refinery expansion on 70-acre site present refinery $50,000,000.

Ont., Kingston—PLANT—Canadian Industries, Ltd., 1135 Beaver Hall Hill, Montreal, nylon plant addn. at Portsmouth. Approx. $500,000. CD 8/15/49.

▲ **Que., Buckingham**—PLANT—Electric Reduction Co. Ltd., Buckingham, phosphorus plant in Veremes district, on St. Lawrence south shore, east of Montreal, Approx. $5,000,000.

▲ **Que., Windsor Mills**—PLANT ADDNS.—Canada Paper Co. Ltd., 407 McGill St., Montreal, existing pulp and paper plant addns. Approx. $2,000,000. W. H. Wharton, c/o owner, engr.

▲ **Yukon Territory, Watson Lake**—DEVELOPMENT—Consolidated West Exploration Co. Ltd., F. M. Connell, pres., 85 Richmond St. W., Toronto, Ont., asbestos deposit development and mill construction, $1,000,000.

UNCLASSIFIED

Fla., Fort Lauderdale—SWIMMING POOL, etc.—City, plans by Robert M. Little, Wm. G. Crawford and Wm. T. Vaughn, 220 S. E. 8 Ave., Fort Lauderdale, swimming pool and bath house at Sunland Park, $200,000.

Louisiana—RURAL DISTRIBUTION LINES — Jefferson Davis Electric Co-operative, Jennings, rural distr. lines, Jefferson Davis Parish, $270,000, McGraw & Hooper, Balter Bldg., New Orleans, consult. engrs. CD 3/25/48.

Mass., Taunton—FIRE PROTECTION—State, Dpt. Mental Health, 15 Ashburton Place, Boston, fire protection etc., $224,000.

▲ **New Mexico, Texas, Oklahoma and Kansas**—GAS PIPE LINE—Permian Basin Pipe Line Co., W. D. Gay, pres., 510 Finance Bldg., Kansas City, Mo., 375 mi. (300 mi. 30-in. and 75 mi. 24-in. welded joint) pipe line natural gas carrier from Hobbs, N. M. to Hugoton, Kan. via Texas and Oklahoma, $30,000,000; natural gas gathering lines, Hugoton, Kan. $350,000; natural gas lateral lines, Hobbs, N. M., $600,000.

† **N. M., Roswell**—FACILITIES—U. S. Eng., P. O. Box 1538, Albuquerque, 5 pump houses; six 25,000 gal. underground tanks and appurtenances; one open type constr. pump house 20,000 bbl steel tank; 15 conc. metering valve pits; 14,000 lin. ft. 10 in. gas pipe; 5,000 lin. ft. 8 in. gas pipe; 9,200 lin. ft. 6 in. gas pipe; tank car unloading station, double 9 each, 2,700 cu. yd. earth embankment, 12,100 lin. ft., 8 and 6 in. water line, 14 fire hydrants, 10,300 lin. ft. 8 in. sewer line clay tile; 4,500 lin. ft. 2 in. steel pipe, 5,100 lin. ft. underground primary distr. 2400/4160 volt; 4,500 sq. yds. gravel roads, 29-005-52-6.

▲ **N. Y., Brooklyn**—PARK—Dpt. Parks, Arsenal Bldg., New York, plans by Reinhard, Hofmeister & Walquist, 145 E. 32 St., New York, Zone 16, cafeteria, bath houses, maintenance bldg. and toll booths at Canarsie Beach Park, $1,296,000. CD 11/14/46.

▲ **North Carolina**—DAM, etc.—Blue Ridge Electric Membership Corp., c/o Schmidt Engr. Co., engr., 817 Broad St., Chattanooga, Tenn., dam and electric on New River, Ashe Co. $15,500,000. CD 2/14.

▲ **O., Toledo**—NAPHTHA REFORMER—Sun Oil Co., 1608 Walnut St., Phila. Pa., catalytic naphtha reformer to produce 10,000 bbls. daily with addnl. tankage and auxiliaries, addns., and improvs. to existing plant to increase charging capacity; storage tanks addn.; products pipe line capacity expans. several millions.

Oklahoma—GATHERING SYSTEM—Warren Petroleum Corp., National Bank of Tulsa, 45 mi. 4 to 30 in. gathering sys., $325,000.

Texas and Oklahoma—RESORT CONSTRUCTION—State Planning & Resources Bd., Morton R. Harrison, State Capitol Bldg. Oklahoma City, Okla., misc. constr. in Texoma Lake zone Resort area, $410,000; roads, streets, $100,000; resort grounds earthwork, grading, leveling, drainage $90,000; water sys., $75,000; sanitary sewer sys. $75,000. near Denison, Tex. and Colbert, Okla. CD 6/18/45. under Denison, Tex.

CONSTRUCTION REPORTS-Second Section

NEW ENGLAND

BIDS ASKED—HEAVY CONSTRUCTION
STATE HIGHWAY LETTINGS
STREETS AND ROADS
September 18 Massachusetts September 25 New Jersey

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

MASSACHUSETTS—Commonwealth of Mass., Dpt. P. Wks., 100 Nashua St., Boston.

Savin Constr. Co., 10 Village St., East Hartford, Conn. CA $663,691. addni. 2 mi. stretch new Route 128 from Beverly toward Gloucester. CD 9/4, under LB.

▲ **MASSACHUSETTS**—Commonwealth of Mass., Dpt. Pub. Wks., 100 Nashua St., Boston.

M. DeMatteo Constr. Co., 200 Hancock St., Quincy, Mass. CA $3,110,313. hy. and bridges, Fall River and Freetown, Bristol Co. Awarded Aug. 20. CD 8/17, under LB.

▲ **Connecticut**—State Hy. Dpt., Hartford.

D. V. Frione & Co. Inc., 87 Foxon St., New Haven, Conn., CA. $1,713,932. highway, East Hartford and Glastonbury.

D'Addario Constr. Co., 513 Boston Ave., Bridgeport, Conn., CA $787,721. highway in Darien. Bids July 30. CD 8/8, under LB.

BUILDINGS

LOW BIDS AND CONTRACTS

Poley Abrahams Corp., 2 Elm Pl., Brookline, Mass. LB $497,400, est. $300,000. community HOSPITAL, GROTON, MASS. Groton Hospital, Main St., Groton, Mass. Bids Aug. 30. CD 8/17.

▲ **Tocci Bros. Constr. Co.**, 38 Colonial Ave., Newtonville Mass. CA $1,588,600. M-214, Contr. 1, HOSPITAL BLDG. for Blind Feeble Minded, Walter E. Fernald State School WAVERLY (BR. BOSTON), MASS. State, Dpt. Mental Health, 15 Ashburton Pl., Boston, Mass. CD 8/15, under LB.

MIDDLE ATLANTIC

BIDS ASKED—HEAVY CONSTRUCTION
STATE HIGHWAY LETTINGS
STREETS AND ROADS
September 19 Delaware

New York—B.A. 9/19—Dpt. P. Wks., Municipal Bldg., New York 7, N. Y. dredging Bowery Bay, Jamaica and Tallmans Island Sewage Treatment Works, Contr. 1-B-13, Queens Boro. Plans deposit $5. Extended date. CD 8/1.

BIDS ASKED—BUILDINGS

N. J., Skillman—MEN'S GROUP, etc.—B.A. 9/17—At office, Fred V. Ferber, dir., Div. of Purchase and Property, State House, W. State St., Trenton, Zone 7, general work, plumbing, heating and ventilating, electric, structural steel and misc. iron work, refrigeration and food service equipment for new Men's Group, Women's Group, and Bergen Group at State Village for Epileptics. Plans deposit $25. Adv. ENR 8/30.

Pa., Reading—SCHOOL, etc.—B.A. 9/27—St. Joseph's Hospital, Reading, 4 story, bsmnt., brick, concrete school of nursing and dormitory. $850,000. Muhlenberg, Yerkes & Muhlenberg, Ganster Bldg., 5 and Walnut Sts., Reading, archts. Schmidt, Garden & Erikson, 104 S. Michigan Ave., Chicago, Ill., assoc. archts.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ **Spencer White & Prentis, Inc.**, 10 E. 40 St., New York, 16, N. Y., CA. $1,157,075, escalator connection between Queensboro subway platform and Grand Central Station mezzanine, NEW YORK, N. Y. Bd. Transportation, 370 Jay St., Brooklyn 1, N. Y. Bids Aug. 23.

▲ **NEW JERSEY**—State Hy. Dpt., 1035 Parkway Ave., Trenton, N. J.

Villa Conig Co., 233 North Ave. W., Westfield, N. J. LB, $1,646,377, constr. Route 4 Parkway, Sections 9 B and 9C-1, from Galloping Hill Rd. to Route 29, 7 bridges and incidental grading, Union Twp., Union Co. Bids Aug. 21. CD 8/2.

▲ **PENNSYLVANIA**—State Hy. Dpt., 506 N. Office Bldg., Harrisburg.

Biaardo, Inc., 331 Bouquet St., Pittsburgh 13, Pa., LB. $301,479, construct 3,688 ft. with plain c. conc. base and bit. surf. T. R. 8, 28, Allegheny Co.;

Howard Worthington, Box 95, Line Lexington, Pa., LB. $63,262. construct 1,753 ft. roadway with crushed stone base and bit. surf., L. R. 09168(1), Bucks Co.;

E. M. Brown, Inc., 11 Quelich Ave., Clearfield, Pa., LB. $159,862. construct 12,254 ft. roadway with crushed aggregate base and bit. surf., L. R. 17008 (4), Clearfield Co.;

Central Pennsylvania Quarry Stripping & Constr. Co., 270 S. Pine St., Hazelton, Pa., LB. $1,228,303, construct 9,331 ft. divided rein.-con. pavement roadway, construct three I-beam bridges, T.R. 111, Cumberland and Dauphin Counties; LB $823,110, construct 25,837 ft. roadway with crushed aggregate base and bit. surf., T. R. 126, Fulton Co.;

A. L. Blades & Sons, 42 Broadway, Hornell, N. Y., LB. $164,287, construct 3,579 ft. roadway with crushed aggregate base and bit. surf., four I-beam bridges, L.R. 318 and 52029, Potter Co.; cancelled bids to have been opened Aug. 24, construct 1,148 ft. roadway with crushed stone base and bit. surf. L.R. 46176, Montgomery Co. CD 8/9.

PENNSYLVANIA—State Hy. Dpt., N. Office Bldg., Harrisburg.

Keelor Constr. Co., Perkiomenville, Pa., CA. $723,561, crushed aggregate base with bit. surf. 18 ft. wide 8.77 mi. and constr. and I-beam bridge over Bell Creek, T.R. 92, Susquehanna Co. Bids Aug. 17. CD 8/22, under LB.

City, Bureau Water Supply, 503 Municipal Bldg., Baltimore 2, Md. contractor made error in bid and released from contract, installing 48 in. water main running for 13,500 ft. from Druid Hill Lake to Poppleton and Lombard Sts., BALTIMORE, MD. CA. $728,610. CD 8/21, under CA.

J. H. Lawrence Co., 2600 Huntington Ave., Baltimore, Md. LB $464,864. approx. 5,000 lin. ft. 8- to 18-in. underground steam conduit from steam distr. sys., Rosewood State Training School, OWINGS MILL, MD. State, Dpt. Pub. Imprvts., 506 Park Ave., Baltimore 2, Md. Van Rensselaer Saxe, 1701 St. Paul St., Baltimore, Md., struct. engr. Eiser & Akers, 916 N. Charles St., Baltimore, Md., mech. engrs.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **B. L. Building Corp.**, 3036 Avenue V, Brooklyn, N. Y., Separate Contracts. $2,600,000. 6 story APARTMENT on blocks bounded by Knapp, Brigham and Plumb First Sts., BROOKLYN, N. Y. CD 3/1.

Jonwal Constr. Co., 1527 Franklin Ave., Mineola, N. Y., CA, $874,025, grade SCHOOL on Smith St. near Southern State Parkway, EAST HEMPSTEAD, N. Y. Bd. Educ., Union Free School Dist. No. 2, East Hempstead, N. Y. Bids June 19, awarded July 10. CD 6/13.

▲ **Hillside Terrace-At-Hicksville Homes**, c/o William P. LaVallee, archt., 164-09 Hillside Ave., Jamaica, N. Y. Owner Builds. Approx. $10,000,000. 650 HOMES and 2 shopping centers on 154 acre site on west side of South Oyster Bay Rd. from Woodbury to Old Country Rds. HICKSVILLE, N. Y.

▲ **Oakfield Village Homes**, c/o Matern & York, archt., 90-04 161 St., Jamaica, N. Y. Owner Builds. Approx. $1,000,000. 109 one-family HOUSES on 22 acre site at Beltagh and Oakfield Aves., WANTAGH, N. Y.

▲ **Levitt & Sons, Inc.**, 3230 Northern Blvd., Manhasset, N. Y., Owner Builds. Approx. $16,000,000. 16,000 HOUSES on 2,000 acre site near U. S. Steel Fairless Works, to be known as Levittown, Pa. MORRISVILLE, PA.

Hanlon Homes, Inc., 3100 Piedmont Ave., Baltimore, Md. Owner Builds. $560,000. one hundred and ten 2 story, masonry HOUSES, 3100 block Artaban Ave., 3000 and 3100 blocks Piedmont Ave., 2700 block Rosedale St., BALTIMORE, MD.

The Meadows, Inc., 6421 Dogwood Rd., Baltimore 7, Md. Owner Builds. $300,000. twenty 21x50 ft. DWELLINGS, Little Creek Dr., Meadow Ave., Coolbrook Ave., BALTIMORE, MD.

Wedgewood Building Co., 1000 Cooks Lane, Baltimore, Md. Owner Builds. $300,000. thirty-six 2 story family HOUSES, 1000 block, 1100 block, 1200 block Cooks Lane. BALTIMORE, MD.

▲† **Jos. Nebel Co.**, 2142 P St. N.W., Wash., D. C. CA. $2,735,000. ANIMAL bldg. at National Institutes of Health, Proj. 18-063, BETHESDA, MD. General Services Admin., Pub. Bldgs. Service, 19 and F Sts. N.W., Wash., D. C. CD 8/2, under LB.

SOUTH

BIDS ASKED—HEAVY CONSTRUCTION
STATE HIGHWAY LETTINGS
BRIDGES
September 18 South Carolina October 3 Louisiana
STREETS AND ROADS
September 18 South Carolina September 19 Louisiana

BIDS ASKED—BUILDINGS

▲ **Fla., Panama City**—HOUSING—B.A. 9/20—Panama City Housing Auth., 200 housing units, Proj. Fla. 18-1 and Fla. 18-2, $1,600,000. CD 7/25, under LB.

BUILDINGS

LOW BIDS AND CONTRACTS

Asphalt Paving Service, Inc., 1901 Hamilton St., Richmond, Va., CA. $288,000. reconstruct Grove Ave., RICHMOND, VA. City, City Hall, Richmond, Va. CD 10/7/43.

NORTH CAROLINA—State Hy. & P. Wks. Comm. Raleigh, N. C.

McMeekin Const Co., Cheraw, S. C., CA. $690,925, est. $400,000-$500,000. 6 bridges and 1 box culvert, incl. bridge over Cape Fear River between N. C. 87 and N. C. 53 near Acme, Proj. 3-214, Bladen Co. Bids Aug. 28, awarded Sept. 4. CD 9/4, under LB.

Roy Richards Const Co., Carrollton, Ga., LB. $338,591, rural distr. lines, Proj 21U Sampson, Pender, Sampson, Bladen and Duplin Counties, NORTH CAROLINA. Four County Electric Membership Corp., Burgaw, N. C., Bids Aug. 28. CD 8/23.

† **Zaret Constr. Corp.**, 1901 W. Ave., Miami Beach, Fla. CA $235,328. launching pads 3 and 4 at Patrick Air Force Base, COCOA, FLA. U. S. Eng., P.O. Box 4970, Jacksonville, Fla. Bids Aug. 29. Bids 7/31 rejected. CD 8/20 under LB.

† **L. E. W. Corp.**, 3850 NW N. River Dr., Miami, Fla. CA $591,418. paving roads and parking areas at Pinecastle Air Force Base, ORLANDO, FLA. U. S. Eng., P.O. Box 4970, Jacksonville, Fla. CD 8/21, under LB.

▲ **LOUISIANA**—State Hy. Dpt., Highway Office Bldg., Baton Rouge.

Texas Bitulithic Co., Burma Rd., New Orleans, La. CA $1,778,874. Grading, drainage 14.222 mi. Boutte-Huey P. Long Bridge Hy., State Rte. 2, S. P. 5-09-07 and 5-10-07, F. A. Proj. F 216 (10), St Charles and Jefferson Parishes. Bids 8/22, awarded Aug. 31. CD 8/30, under LB.

T. Miller & Sons, P. O. Box 921, Lake Charles, La. LB $808,826. Sewerage treatment plant, LAFAYETTE, LA. City, Lafayette, La. Bids Aug. 28. CD 8/7.

BUILDINGS

LOW BIDS AND CONTRACTS

English Constr. Co., Altavista, Va., CA. $966,666. Consolidated HIGH SCHOOL 2, HARRISONBURG, VA. Rockingham Co., Harrisonburg, Va. Bids Aug. 30. CD 1/18.

▲ **South Eastern Constr. Co.**, 301 W. Second St., Charlotte, N. C., CA. Approx. $1,000,000. CHEMICAL PLANT addn. CHARLOTTE, N. C. Reichhold Chemicals, Inc., 30 Rockefeller Plaza, New York 20, N. Y.

▲ **Gordy & Son, Inc.**, Wilmington Manor, Wilmington, Del. Owner Builds. $25,000,000. 2,700 HOME Community, 3-year program, AIKEN, S. C.

R. V. Ratchford, Ram Bldg., Aiken, S. C., Owner Builds. Approx. $800,000. 100 HOMES, AIKEN, S. C.

† **Mion Constr. Co.**, 377 Techwood Dr., Atlanta, Ga. CA $894,090. Base maintenance SHOP, Atlanta General Depot, ATLANTA, GA. U. S. Eng., Post Office Bldg., Savannah, Ga. CD 8/29, under LB.

Cravero Constructors, Inc., 11295 Biscayne Blvd., Miami, Fla. Owner Builds. $375,000. 43 HOMES, MIAMI, FLA.

Normandy Isle Apartments, c/o L. H. Glasser, archt., 835 Lincoln Rd., Miami Beach, Fla. Owner Builds. $400,000. 50 APARTMENT units, MIAMI BEACH, FLA.

▲ **H. K. Ferguson Co.**, 1783 E. 11 St., Cleveland, Ohio, CA, $10,000,000, rayon weave PLANT, MOBILE C ALA. Courtaulds, Inc., c/o Lutre Fiber, 600 5th Ave., New York, N. Y., and St. Martins-le-Grand, London, England. CD 7/30.

Gervais F. Favrot Co., Balter Bldg., New Orleans, La. CA $656,437. 2 story, brick, steel, limestone Xavier Preparatory SCHOOL, NEW ORLEANS, LA. Sister of Blessed Sacrament, 5100 Magazine St., New Orleans, La. Awarded Aug. 31. CD 8/29, under LB.

George E. Reese Const Co., 704 Reid Ave., Nashville, Tenn., CA. $300,000. rebuild Gallatin HIGH SCHOOL, GALLATIN, TENN. Sumner Co., Gallatin, Tenn.

MIDDLE WEST

BIDS ASKED—HEAVY CONSTRUCTION
STATE HIGHWAY LETTINGS
BRIDGES
September 25 Wisconsin
STREETS AND ROADS
September 20 Indiana September 25 Wisconsin

Mich., St. Johns—B.A. 9/21—City, Jessie A. Finch, clk., sewage disposal treatment plant, Div. C, plant control bldg., raw sewage, filter effluent wells, etc. Plans deposit $15. Extended date. R. W. Petrie & Assoc., 537 Paw Paw Ave., Benton Harbor, engrs. CD 9/5.

BIDS ASKED—BUILDINGS

Ind., Indianapolis—SCHOOL—B.A. 9/18—Bd. School Comrs., M. V. Bailey, bus. dir., 150 N. Meridian St., Zone 4, 1 story, bsmnt., brick, stone, rein.-con. grade school. $550,000. Plans deposit $25. Robert, Frost, Daggett & Assoc., 350 E. Fall Creek Blvd., N. Dr., archts.

Ill., East St. Louis—HOUSING—B.A. 9/20—St. Clair County Housing Auth., J. E. Hays, exec. dir. 6 St. and Ohio Ave. East St. Louis, Ill., housing projects (A) John DeShields Homes, 300 units Proj. Ill. 13; (B) Roosevelt Homes, 300 units, Proj. Ill. 1-4; (C) Villa Griffin, 100 units, Proj. Ill. 1-5. Charles B. Spencer, 929A Missouri Ave., East St. Louis and 401 Chemical Bldg., 721 Olive St., St. Louis, 1, MO., archt. Extended date. CD 7/23.

▲ **Ill., Chicago**—WAREHOUSE, etc.—Bids Asked—Allied Radio Corp., 833 W. Jackson St., Chicago, Zone 6, 150,000 sq. ft., warehouse and 2 story, 35,000 sq. ft. office at 100 N. Western Ave., $1,500,000. A. Epstein & Sons Co., 2011 Pershing Rd., Chicago, 9,

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

ILLINOIS—State Hy. Dpt., Springfield, Ill. rejected bids Aug. 24, c. conc. pavement and culvert 1.15 mi. Ill. Rte. 4, Greene Co., L.B. $222,854; intermittent bit. resurf. 3.3 mi. Ill 37 and U.S. 460, Hamilton and Franklin Counties, L.B. $104,646; intermittent bit.

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resurf. 2.48 mi. Ill. Rtes. 2, 3, 13 and 150, Jackson, Perry, Randolph, Union and Washington counties, L.B. $135,214; c. co.c. patching Ill. Rtes. 7, 78 and 104, Morgan and Scott Counties, L.B. $72,318; intermittent bit. resurf. Ill. 43 and U.S. 460, St. Clair, Washington and Randolph Counties, L.B. $119,857; intermittent bit. resurf. Rtes. 147, 146, 1 and 2, Saline, Williamson, Pulaski and Johnson Counties, L.B. $266,264. CD 8/29, under LB.

▲ **Mary Constr. Co.**, 1904 Delmar Blvd., St. Louis 3, Mo. CA. Approx. $1,900,798, development Old Waterloo, Ill. oil fields into an underground storage reservoir for natural gas, incl. storing gas under pressure, drilling 25 wells, sealing off wells, compressor station, etc., ILLINOIS. Mississippi River Fuel Corp., 407 N. 8 St., St. Louis 1, Mo. CD 1/16.

WISCONSIN—State Hy. Comn., State Office Bldg., Madison.

H. F. Schams Constr. Co., 1300 Denton St., LaCrosse, Wis. LB $106,146. grade, drain 5.134 mi. Cutler-Necedar-East County line Rd., S.T. Hy. 21, Proj. S 0500 (15), Juneau Co.

Arthur J. Pagel, Almont, Wis. LB $125,123. grade, drain 7.027 mi. U.S.H. 51-C.T.H. K Rd., S.T. Hy. 54, Proj. T 033 (2), Contr. 1, Portage Co.

Braun Constr. Co., Rte. 2, Fond du Lac, Wis., LB $291,713. sand grav. fill and base course 9.789 mi. Old U.S.H. 41-North County line (S.T.H. 23-North County line sect.) Rd., U.S. Hy. 41, Proj. F 03-1 (29), Contr. 2, Fond du Lac Co. Bids Sept. 4. CD 8/20.

MICHIGAN—State Hy. Comn., 213 S. Capitol Ave., Lansing.

Bacco Constr. Co., Iron Mountain, Mich., LB $653,456, est. $200,000 and $430,000, grading 7.557 mi. relocation M-35, F 55-33, C5, (F 126 12), F 55-33, C4 (F 126 10), Menominee Co.

Alpine Constr. Co., St. Ignace, Mich., LB $66,694, est. $70,000, stabilized aggregate 2.16 mi. county road, F 48-24, C1 (F 190 20), Luce Co.

Thornton Constr. Co., Hancock, Mich., LB $71,950, est. $40,000, conc. 0.269 mi. M-26 and double seal non skid 7.483 mi. M-26, M 31-20, C7, M 31-20, C8 and M 31-33, C2, Houghton Co. Bids Aug. 28. CD 8/23.

▲ MICHIGAN—State Hy. Comn., 213 E. Capitol Ave., Lansing.

Lewis & Frisinger Co., Ann Arbor, Mich. LB $115,914; est. $100,000. b. conc. 1.069 mi. M 112, M 82-136, C1, Wayne Co.

Sargent Constr. Co., 2840 Bay Rd., Saginaw, Mich. LB $246,455, b. conc. 2.725 mi. M-29, M 77-74, C1, St. Clair Co.

Hertel-Deyo Co., 5205 Division St. S., Grand Rapids, Mich. LB $97,749, est. $100,000. stabilized aggregate wid'n. 1.329 mi. US-27, M 18-4, C., Clare Co.

Ayling Asphalt Paving Co., Adrian, Mich., LB $507,486. b. conc. 16.535 mi. US-223 and M-50, M 58-3, C3, etc., Monroe and Lenawee Counties.

A & A Asphalt Paving Co., 1045 Haynes St., Birmingham, Mich. LB $95,325. b. conc. 4.78 mi. county road 12 Mile Rd., CS 63-83A, C1 (S 643 2), CS 63-83B, C2 (S 643 1), St. Clair Co. Bids Aug. 29. CD 8/23.

City, Robt. G. Loeffler, city clk., Flint, Mich. Owner Builds. $621,768. street imprvs., paving, blacktopping city wide constr., FLINT, MICH. Bids Aug. 13.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **Austin Co.**, 16112 Euclid St., Cleveland, O., CA. Approx. $1,000,000. brick, steel WAREHOUSE and BOILER HOUSE on south side of Innis Rd., Clinton Twp., COLUMBUS, O. Shoe Corp. of America, 35 N. 4 St., Columbus, O. CD 1/18.

▲ **Custom Constr. Co., Inc.**, 904 Hartford St., Akron, O., CA. Approx. $3,000,000. 20 HOMES along Rte. 91, north in Knollwood Estates, TALLMADGE, O. Stanson Realty Co., 2nd Natl. Bldg., Akron, O.

A. Bentley & Sons Co., 201 Belmont St., Toledo, O., CA. WAREHOUSE alterations, incl. 40x240 ft. balcony in present bldg. at Ash St. and Wheeling and Lake Erie R.R., TOLEDO, O. Ownes-Illinois Glass Co., Libbey Glas Div., Ohio Bldg., Toledo, O.

Steinle-Wolfe Co., Fremont, O., LB. $720,296, general constr. DORMITORY bldgs., TOLEDO, O. University of Toledo, Asa S. Knowles, pres., Bancroft St., Toledo, O. Bids Aug. 27. CD 8/1.

▲ **Bechtel Corp.**, 3780 Wilshire Blvd., Los Angeles, Calif., CA, $4,000,000, WAREHOUSE, HAMMOND, IND. Lever Bros. Co., 505 Park Ave., New York, N. Y. Awarded Aug. 23. CD 10/20/49.

Federal Constructors, Inc., 173 W. Madison St., Chicago, Ill., LB. $597,000. general constr. RESIDENTIAL unit for mentally ill children, CHICAGO, ILL. State, Springfield, Ill. Bids Aug. 28. CD 8/22.

▲ **G. A. Karam Co.**, 4038 Catalpa St., Berkeley, Mich. Owner Builds. $2,700,000. 300 single HOMES, East Nine Mile Rd., near John Rd., DETROIT, MICH.

▲ **Christman Co.**, 408 Kalamazoo Plaza, Lansing, Mich. CA $9,000,000. compressor and turbine PLANT for aircraft engine parts, Sapphire Jet 65, W. Saginaw St., LANSING, MICH. Oldsmobile Div. General Motors Corp., J. F. Wolfram, gen. mgr., 1014 Townsend St., Lansing, Mich. Bids Aug. 22. CD 8/10.

Ray Stevens Co., Kalamazoo, Mich. CA $535,000. 2 story, bsmnt., brick, steel high SCHOOL adn., PORTAGE, MICH. Portage Twp. Bd. Educ., Portage, Mich. Bids Aug. 22. CD 7/27.

WEST OF MISSISSIPPI

BIDS ASKED—HEAVY CONSTRUCTION
STATE HIGHWAY LETTINGS
BRIDGES
September 21 Minnesota
STREETS AND ROADS
September 21 Minnesota

Kan., Abilene—B.A. 9/20—City, street imprvs. Plans deposit $10, Wilson & Co., 223 N. Santa Fe St., Salina, engrs.

† **Oklahoma**—B.A. 9/20—U. S. Eng., P. O. Box 61, Tulsa, riprap upstream side of embankment, $400,000.

▲† **Tex., Lackland Air Base** (Br. San Antonio)—RECORDS and PROCESSING BLDG.—B.A. 9/28—U. S. Eng., 606 Santa Fe Bldg., Galveston, records and processing bldg. Inv. No. Eng-41-243-52-19. $2,000,000. CD 9/5, under LB.

▲ **Texas**—OIL LINE—Bids Asked—Continental Pipe Line Co., 502 Navigation Blvd., Corpus Christi, 23 mi. 8 in. crude oil line near Rio Grand City to McAllen, $445,000; 87 mi. 8 in. crude oil pipe line, Port Isabel to McAllen, $1,500,000; 6 crude oil pumping stations, one every 22 mi. from Rio Grand City to Port Isabel, $550,000. CD 8/23.

Tex., Corpus Christi—Bids Asked—Nueces Co. Navigation Dist., c/o Byrd Harris, port dir., Guggenheim-Cohen Bldg., slips. $200,000. Horner & Wyatt, Dwight Bldg., Kansas City, Mo., engrs. Duane Orr, dist. engr.

BIDS ASKED—BUILDINGS

Colo., Colorado Springs—SCHOOLS—B.A. 9/19—School Dist. 11, El Paso County, Colorado Springs, Colo., 1 story, brick Buena Ventura Grade School, south of Patty Jewett Golf Course, $400,000; grade school in Knobb Hill Section, $400,000. Thomas & Sweet, 224 Colorado Springs National Bank Bldg., Colorado Springs, Colo., engrs. CD 3/9.

Minn., Robbindale—SCHOOL—B.A. 9/20—Bd. Educ., R. J. Parish, clk., grade school in Crystal, $800,000. Plans deposit $25. Haxby, Bissell & Belair, 1111 Nicollet Ave., Minneapolis, archts. CD 5/23.

▲† **Tex., Mineral Wells**—HEADQUARTERS—B.A. 9/26—U. S. Eng., 1127 Texas and Pacific Bldg., Fort Worth, group headquarters and battalion headquarters bldg., totalling approx. 90,000 sq. ft. for bldgs., frame, permanent type constr. Wolters Air Force Base, $1,500,000. CD 7/16.

▲ **Tex., Corpus Christi**—GRAIN ELEVATOR—Bids Asked—Nueces Co. Navigation Dist., c/o Byrd Harris, Airport Dir., Guggenheim-Cohen Bldg., grain elevator. $3,500,000. Horner & Wyatt, Dwight Bldg., Kansas City, Mo., engrs. Duane Orr, dist. engr. CD 4/6, under LB.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ **IOWA**—State Hy. Comn., Ames,
Cameron-Joyce & Co., Keokuk, Ia., LB. $161,773, paving 2.74 mi. Proj. F-51 (5), Guthrie Co.; L.B. $168,550, paving 2.974 mi. Proj. F-619 (7), Guthrie Co.

Hargrave Constr. Co., 2424 Bever St., S.E., Cedar Rapids, Ia., LB. $406,700, b. conc. resurf. 28.808 mi. Proj. P-1022, Adair and Madison Counties; LB. $246,056, b. conc. resurf. 18.758 mi. Proj. P-1024, Boone and Story Counties; L.B. $171,487, b. conc. resurf. 12.197 mi. Proj. P-611, Carroll Co.; L.B. $64,596, b. conc. resurf. 3.935 mi. Proj. FN-203, Green Co.; L.B. $520,928, b. conc. resurf. 37.548 mi. Proj. P-1023, Madison, Warren and Polk Counties; L. B. $192,785, b. conc. resurf. 15.203 mi. Proj. P-1025, Story and Hardin Counties.

Land Constr. Co., 502 Seneca St., St. Joseph, Mo., L.B. $253,048, b. conc. resurf. 16.97 mi. Proj. FN-155, Cass Co.

M. L. Johnson, 112-32 St. S.E., Cedar Rapids, Ia., L.B. $76,800, grading 6.592 mi. Proj. F-234 (4), Cedar and Jones Counties.

Ira Van Buskirk & Sons, Howarden, Ia., L.B. $64,888, grading 6.725 mi. Proj. SN-1828, Fremont Co.

Braden Constr. Co., Griswold, Ia., L.B. $60,389, grading 8.433 mi. Proj. SN-1000, Page Co.

John W. Whalen, Rockport, Mo., L.B. $239,928, grading 15.072 mi. Proj. P-1011, Ringgold Co. Bids Sept. 4, CD 8/28, 8/29.

▲† **Western Contg. Co.**, 400 Benson Bldg., Sioux City, Ia. CA $1,700,000. roads, streets at Wichita Air Force Base B-47, WICHITA, KAN. U.S. Eng., 601 Davidson Bldg., Kansas City 8, Mo. Bids Aug. 16. Awarded Aug. 17.

▲ **Martin K. Eby Constr. Co., Inc.**, 610 N. Main St., Wichita, Kan. CA $1,400,000 frame, concrete BUILDINGS, incl. storage structures of various types, at Wichita Air Force Base, WICHITA, KAN. U.S. Eng., 601 Davidson Bldg., Kansas City 8, Mo. Bids Aug. 14. Awarded Aug. 15. CD 8/16 under LB.

▲† **M. E. Gillioz, Monett, Mo., LB. $1,226,062.** est. $1,500,000. relocation of M-K-T railway tracks at Fort Gibson Dam, Grand Neodho River Watershed, Inv. No. CIVENG 45-066-52-5. OKLAHOMA. U.S. Eng., in Theatre of Naval Reserve Center, 15 land Sandusky Sts., Tulsa, Okla., Bids Aug 21. CD 7/30.

† **Robert E. McKee**, 1900 Texas Ave., El Paso, Tex., LB. $884,800. POL facilities, incl. 5 pumphouses, 25x58 ft., brick veneer; one pump house, open type constr., underground tanks, unloading stations, electric wiring, etc., at Biggs Air Force Base, EL PASO, TEX. U. S. Eng., Box 1538, Albuquerque, N. M. Bids Aug. 28.

† **Baldwin-Lima-Hamilton Corp.**, 60 E. 42 St., New York, N. Y., CA. $560,000. Four 168 in. butter-fly valves and 4 control units for Mexican side, Spec. D-4535 (IBWC) Falcon Dam and Power Plant, ROMA, TEX. Bureau Reclamation, Dpt. Interior, El Paso, Tex. Bids July 31, awarded Aug. 21. CD 8/31, under LB.

▲† **Eckert-Fair Constr. Co.**, National City Bldg., Dallas, Tex., LB. $1,988,000. 3 story concrete, frame academic bldg. at Sheppard Air Force Base, WICHITA FALLS, TEX. U. S. Eng., Box 61, Tulsa, Okla., CD 2/12.

† **L. & S. Constr. Co.**, Casper, Wyo., LB $64,478, est. $81,918, 36 mi. Seminoe-Bairoil 34.5 mi. transmission line, Spec. DC-3501, Kendrick Proj., WYOMING. Bureau Reclamation, Dpt. Interior, Bldg. 1A, Denver Federal Center, Denver, Colo. Bids Aug. 28. CD 8/1.

† **Mayre-Northwestern Eng. Co.**, E. 60 Ave. and Hy. 6, Denver, Colo., CA. $879,927, general construction airlines office bldg., (NW wing) 2 story, partial bsmnt. 151x444 ft., rein.-con. frame, brick, stone walls, DENVER, COLO. City and Denver Co., City and County Bldg., Denver, Colo. Bids Aug 21, awarded Aug. 28.. CD 8/30, under LB.

† **Morrison-Knudsen Co., Inc.**, 411 W. 5 St., Los Angeles, Calif., LB. $897,961, est. $985,507, channelization of Rio Grande River from San Marcial to the Narrows of Elephant Butte Reservoir, Spec. DC-3510, Middle Rio Frande Proj., NEW MEXICO. Bureau Reclamation, Dpt. Interior, El Paso, Tex. Bids Aug 30. CD 8/9.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **M. L. Michaelson**, 520 S. 5 St., Salina, Kan. Owner Builds. $1,000,000. HOUSING, SALINA, KAN.

Panola Co., c/o judge, Carthage, Tex., cancelled bids to have been opened Aug. 31, COURTHOUSE, CARTHAGE, TEX. est. $500,000. Preston M. Geren, 905 N. P. Anderson Bldg., Fort Worth, Tex., archt.

FAR WEST

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

† **OREGON**—U. S. Eng., Pittock Block, Portland,
Cosmo Gilo, Mehama, Ore., CA. $551,617. 10 mi. County Road 360, CIVENG 35-026-52-33, Lane Co. Bids Aug. 23, awarded Sept. 1. CD 8/29, under LB.

† **Del Monte Electric Co.**, 2600 Hearst Ave., Oakland, Calif., LB. $150,628, est. $123,244, constr. Tracy switchyard 115 kv- and 69 kv switchyard addns., Spec. DC-3502 Central Valley Proj., CALIFORNIA. Bureau Reclamation, Dpt. Interior, Tracy, Calif., Bids Aug. 30. CD 8/9.

† **A. J. Cheff Constr. Co.**, 410 4 Ave., Seattle, Wash., LB. $855,473, est. $968,118, construct Sheffield Tunnel, part of Carpenteria sect. of South Coast conduit, Spec. DC-3500, Cachuma Proj., CALIFORNIA. Bureau Reclamation, Dpt. Interior, Goleta, Calif. Bids Aug. 30. CD 8/1.

† **Guy F. Atkinson Co.**, Box 259, Long Beach, Calif., CA. $708,500. instrumentation station facilities, Spec. 31437, San Nicholas Island, POINT MUGU, CALIF. Navy Dpt., Air Missile Test Center, Point Mugu, Calif. CD 7/23/48.

BUILDINGS

LOW BIDS AND CONTRACTS

▲† **Zoss Constr. Co.**, Pittock Block, Portland, Ore. CA. $1,425,488. WAREHOUSE at Mt. Rainier Ordnance Depot, Inv. 52-3, TACOMA, WASH. U. S. Eng., 4735 E. Marginal Way, Seattle 4, Wash. CD 7/27.

Busboom & Rauh, N. 601 Cedar St., Spokane, Wash. LB $439,352. 2 story, bsmnt., 27,000 sq. ft. St. Martin's HOSPITAL addn., TONASKET, WASH. Dominican Sisters of Washington, Tonasket, Wash. Bids Aug. 28. CD 8/22.

▲ **Ford J. Twaits Co.**, 449 S. Beaudry St., Los Angeles, Calif. CA. $1,750,000. 6 story, 125,000 sq. ft. rein.-con. OFFICE, LOS ANGELES, CALIF., Southern California Gas Co., 810 S. Flower St., Los Angeles, Calif. CD 1/19.

ALASKA

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

† **ALASKA**—Bureau P. Rds., Dpt. Commerce, Juneau,
Stock & Grove, Anchorage, Alaska, CA., $675,410, bridge, with clearing, grubbing, grading 3/3 mi. Sitka Hy. Proj. 11-A4, B4, D. Bids Aug. 21. CD 8/2.

▲† **ALASKA**—Bureau P. Rds., Dpt. Commerce, Juneau, Alaska.
Manson-Osberg Constr. Co., 1132 N. 128 St., Seattle, Wash., CA. $1,939,350. widn., surf., 6.9 mi. North Ketchikan to Whippel Creek. Proj. 1A5, B8, G4, 12. Bids Aug. 9. CD 8/14, under LB.

† **S. Bergeson**, Route 10, Box 971, Tacoma, Wash., CA. $572,291, VHF communciations facilities at McGrath, Minchumina and Farewell, Inv. 851-630. ALASKA. Civil Aeronautics Admin., Dpt. Commerce, Box 440, Anchorage, Alaska. Bids July 3. CD 7/16, under LB.

† **U. S. Eng., New Washington Hotel**, Seattle 1, Wash. rejected bids July 26, aircraft parking apron, Inv. No. S95-597-11-121, Elelson Air Force Base, LB., $870,815. est. $611,940, ALASKA. Will re-advertise. CD 7/31, under LB.

▲† **M. P. Butler**, 3419 13 Ave. S. W., Seattle, Wash., LB. $597,800. Diversion dam, cooling pond and roadway for 9,500-heating and power plant, ANCHORAGE, ALASKA. The Alaska Railroad, Dpt. Interior, Anchorage, Alaska. Bids Aug. 30. CD 8/17.

▲† **Haddock Engineers, Ltd., & Assoc.**, Insurance Bldg., Seattle 4, Wash. CA. $1,678,500. outside utilities, Inv. 51-113, WHITTIER, ALASKA. U. S. Eng., (APO 942, c/o PM, Seattle, Wash.) Anchorage, Alaska. CD 7/12, under LB.

U. S. POSSESSIONS

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲† **Hate Rey Building Co.**, Puerto Rico, LB. $1,533,759, est. $1,635,792, nurses quarters, erection compass surveying, hard stands land taxiway lighting Ramey Air Force Base, AGUADILLA, PUERTO RICO. U. S. Eng., 575 Riverside Ave., Jacksonville, Fla., CD 9/5.

CANADA

BIDS ASKED—BUILDINGS

▲ **Ont., Camp Borden**—BARRACK BLOCKS—B.A. 9/18—R. P. Opie, c/o Defence Constr. Ltd., 441 Queens Quay W., Toronto Zone 28, 250 man Barrack Block 4, Job 1527, 250-man Barrack Block 3, Job. 1526. both at Army Camp. $700,000 each. Plans deposit $50 each. S. M. Connolly, c/o owner, engr.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ **Ontario Hydro Electric Power Comn.**, 620 University Ave., Toronto, Ont. Own Forces. Approx. $3,900,000. Hydro-electric power station, 3 mi. west of KITCHENER, ONT.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **Koppers Co. Inc., Koppers Bldg., Pittsburgh, Pa.,** CA. $16,000,000 (total est.). STEEL MILL expans., for coke ovens to carbonize approx. 1,400 tons coal daily, SYDNEY, N. S. Dominion Steel & Coal Corp., Ltd., Sydney, N. S. CD 7/5.

▲ **Carter Constr. Co. Ltd.**, 419 Cherry St., Toronto, Ont. CA. $2,232,700 PLANT for Canadian Arsenals, Ltd., TORONTO, ONT. Dpt. National Defence, Cartier Sq., Ottawa, Ont.

▲ **Dansereau, Ltee.**, 1387 Bernard Ave., Montreal, Que., CA. Approx. $1,750,000. 7 story HOSPITAL addn., MONTREAL, QUE. St. Jeanne d'Arc Hospital, St. Urbain and Prince Arthur Sts., Montreal, Que. CD 8/31.

Dube & Dube, 14 Place d' Aguillon, Quebec City, Que., CA. Approx. $550,000. 5 story, 56x200 ft., rein.con. brick CHAPEL and SCHOOL of Puericulture annex at hospital, Ste. Foye, QUEBEC CITY, QUE. Soeurs du Bon Pasteur, Hospital Misericorde, 680 Chemin St., Quebec City, Que. P. Cote, 19 Bon Rair Ave., Quebec City, Que., archt.

▲ **Hollinger North Shore Exploration Co.**, Sept Iles, Que., Own Forces. Approx. $1,000,000. HOUSING, SEPT ILES, QUE.

▲ **Shawinigan Chemicals Ltd.**, 600 W. Dorchester St., Montreal, Que. Owner Builds. Approx. $3,000,000. Phosphorous PLANT, producing 35 million lb. phosphorous per year, VARENNES (P. O. Montreal), QUE.

▲ **Louis Donolo, Inc.**, 8320 St. Laurence Blvd., Montreal, Que., CA. Approx. $3,265,320, four STORAGE bldgs. and related facilities, Naval Stores, VILLE LA SALLE, QUE. Defence Production Dpt., 1247 Guy St., Montreal, Que. CD 7/30, under LB.

AMERICANS ABROAD

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ **Charles T. Main**, 80 Federal St., Boston, Mass., U.S.A., consult. engr., will design and supervise const, Approx. $246,000,000. hydro-electric project, (due for completion 1954), SARIYAR, TURKEY. Govt. of Turkey, Ankara, Turkey.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **Hydropress, Inc.**, 570 Lexington Ave., New York, N. Y. U.S.A. CA. Approx. $2,000,000. STEEL MILL, MANILA, PHILIPPINE ISLANDS. National Shipyard & Steel Corp., c/o Philippine Govt., Manila.

(Proposal Advertisements see pp. 120 to 123)

OFFICIAL PROPOSALS

Bids: September 19, 1951

Truck Weighing Stations

NOTICE TO CONTRACTORS: STATE DEPARTMENT OF PUBLIC WORKS, ALBANY, N. Y.—Pursuant to the provisions of the Highway Law, sealed proposals will be received until ten-thirty o'clock A.M., advanced standard time, which is nine-thirty o'clock A.M., eastern standard time on Wednesday, September 19, 1951 by Henry A. Cohen, Director, Bureau of Contracts & Accounts, 14th Floor, The Governor Alfred E. Smith State Office Building, Albany, N. Y., for the following projects: Maps, plans, specifications and proposal forms may be seen and obtained at the office of the State Department of Public Works, Bureau of Contracts & Accounts, Albany, N. Y., and at the office of the District Engineers noted below, and may also be seen at the office of the State Department of Public Works, 270 Broadway, New York City.

The deposit for plans and proposal forms for each contract is indicated below. A refund will be made in full to bidders for the return of one set in good condition within 30 days of award or rejection of bids; refund for all other sets in good condition, similar period, will be 50% of deposit.

County	Contract No.	Name	Miles	Type	Deposit	Estimated Cost of Work
		DISTRICT No. 6				
		H. F. Brumm, Dist. Engr., 30 West Main St., Hornell, N. Y.				
Steuben	W. S. No. 35	Truck Weighing Station Turn-out on Painted Post-Campbell, S. H. 5211	0.26	Asp. Conc. Ty. 1A, Opt.	$650 Plans $10	$12,000
		DISTRICT No. 7				
		R. F. Hall, Dist. Engr., 444 VanDuzee St., Watertown, N. Y.				
Jefferson	W. S. No. 31	Truck Weighing Station Turn-out on Adams-Watertown, Rt. 3, S. H. 5119	0.19	Asp. Conc. Ty. 1A, Opt.	$600 Plans $10	$11,500
		DISTRICT No. 8				
		J. S. Bixby, Dist. Engr., Pleasant Valley Rd., Poughkeepsie, N. Y.				
Ulster	W. S. No. 12	Truck Weighing Station Turn-out on Post Rt. 1, S. H. 231	0.19	Asp. Conc. Ty. 1A, Opt.	$600	$10,500

Special attention of bidders is called to "General Information for Bidders" in the proposal, specification, and contract agreement. Award of a contract is subject to the "Controlled Materials Plan" of the National Production Authority as well as to regulations issued thereunder.

Proposal for each contract must be submitted in a separate sealed envelope with the name and number of the contract plainly endorsed on the outside of the envelope. Each proposal must be accompanied by draft or certified check payable to the order of the "State of New York, Commissioner of Taxation and Finance" for the sum as specified in the advertisement and the proposal. The retention and disposal of the bidding check, the execution of the contract and bonds shall conform to the provisions of the Highway Law, as set forth in "Instructions to Bidders."

The right is reserved to reject any or all bids.

B. D. TALLAMY
Supt. of Public Works

Bids: September 19, 1951

Mohawk Section Investigations

NOTICE TO CONTRACTORS: STATE DEPARTMENT OF PUBLIC WORKS, ALBANY, N. Y.—Pursuant to the provisions of Highway Law, sealed proposals will be received until two o'clock p.m., advanced standard time, which is one o'clock p.m., eastern standard time, on September 19, 1951 by Henry A. Cohen, Director, Bureau of Contracts and Accounts, 14th Floor, The Governor Alfred E. Smith State Office Building, Albany, N. Y., for

SOIL EXPLORATIONS AND FOUNDATION INVESTIGATIONS AT VARIOUS SITES ON THE NEW YORK STATE THRUWAY, MOHAWK SECTION, SUBDIVISION NO. 9, UTICA WEST CITY LINE TO BURCH CREEK, ONEIDA COUNTY, WHICH CONSTITUTES CONTRACT NO. SPEC. SM-21.

Maps, plans, and specifications may be examined and obtained at the Bureau of Contracts and Accounts on the 14th Floor, The Governor Alfred E. Smith State Office Building, Albany, N. Y. and also in the office of Lacey Ketchum, District Engineer, 109 North Genesee Street, Utica 1, New York.

The deposit for a set of plans, specifications and proposal forms is $5.00. A refund in full will be made to bidders for return of one set in good condition within 30 days of award or rejection of bids; refund for all other sets in good condition, similar period, will be 50% of deposit.

The Engineer's estimate of cost for this work is $23,813.00.

Proposal for this contract must be submitted in a separate sealed envelope with the name of the contract plainly endorsed on the outside of the envelope. Proposal must be accompanied by draft or certified check, payable to the order of the "State of New York, Commissioner of Taxation and Finance" for the sum of $1200.00. The retention and disposal of the bidding check the execution of the contract and bonds shall conform to the provisions of the Highway Law, as set forth in "Instruction to Bidders".

The right is reserved to reject any or all bids.

B. D. TALLAMY
Superintendent of Public Works

Bids: September 19, 1951

Soil Explorations and Foundations

NOTICE TO CONTRACTORS: STATE DEPARTMENT OF PUBLIC WORKS, ALBANY, N. Y.—Pursuant to the provisions of Highway Law, sealed proposals will be received until two o'clock p.m., advanced standard time, which is one o'clock p.m., eastern standard time, on September 19, 1951 by Henry A. Cohen, Director, Bureau of Contracts and Accounts, 14th Floor, The Governor Alfred E. Smith State Office Building, Albany, N. Y., for

SOIL EXPLORATIONS AND FOUNDATION INVESTIGATIONS AT VARIOUS SITES ON THE NEW YORK STATE THRUWAY, ONTARIO SECTION, SUBDIVISIONS NOS. 1, 2, 3 and 4, ERIE COUNTY LINE TO ROUTE 33, GENESEE COUNTY WHICH CONSTITUTES CONTRACT NO. SPEC. SM-20.

Maps, plans and specifications may be examined and obtained at the Bureau of Contracts and Accounts on the 14th Floor, The Governor Alfred E. Smith State Office Building, Albany, N. Y. and also in the office of A. R. Mulligan, District Engineer, Barge Canal Terminal, Rochester 1, New York.

The deposit for a set of plans, specifications and proposal forms is $5.00. A refund in full will be made to bidders for return of one set in good condition within 30 days of award or rejection of bids; refund for all other sets in good condition, similar period, will be 50% of deposit.

The Engineer's estimate of cost for this work is $24,878.00.

Proposal for this contract must be submitted in a separate sealed envelope with the name of the contract plainly endorsed on the outside of the envelope. Proposal must be accompanied by draft or certified check, payable to the order of the "State of New York, Commissioner of Taxation and Finance" for the sum of $1250.00. The retention and disposal of the bidding check, the execution of the contract and bonds shall conform to the provisions of the Highway Law, as set forth in "Instruction to Bidders".

The right is reserved to reject any or all bids.

B. D. TALLAMY
Superintendent of Public Works

Bids: September 27, 1951

Sewer Construction Work

Notice is hereby given that sealed bids or proposals for furnishing all labor and materials for the construction of approximately 128,465 lineal feet of 8", 10", 12", 15" and 18" sanitary sewers, manholes, and miscellaneous appurtenances, and for the construction of a new Sewage Treatment Works, in the Borough of Morrisville, Bucks County, Pennsylvania, will be received by the Municipal Authority of the Borough of Morrisville, in the Council Chambers of the Borough Hall, Washington Street and Chambers Street, Morrisville, Bucks County, Pennsylvania, up to 2:00 o'clock P.M., Eastern Daylight Saving Time, Thursday, September 27, 1951 at which time the proposals will be publicly opened and read aloud.

The sewer construction work will be divided into three contracts designated as:

CONTRACT NO. 1: Branch and Intercepting Sewers consisting of approximately 47,500 lineal feet of 8"-10"-12"-15"-16" and 18" Sanitary Sewers together with manholes and miscellaneous appurtenances.

CONTRACT NO. 2: Branch and Intercepting Sewers, consisting of approximately 37,625 lineal feet of 8"-10" and 12" Sanitary Sewers together with manholes and miscellaneous appurtenances.

CONTRACT NO. 3: Branch and Intercepting Sewers consisting of approximately 43,340 lineal feet of 8"-10"-and 12" sanitary sewers together with manholes and miscellaneous appurtenances.

The construction of the new Sewage Treatment Works will be divided into five contracts designated as:

CONTRACT NO. 4—STRUCTURAL WORK
CONTRACT NO. 5—MECHANICAL WORK
CONTRACT NO. 6—ELECTRICAL WORK
CONTRACT NO. 7—HEATING & VENTILATING WORK
CONTRACT NO. 8—PLUMBING WORK

Copies of the plans, specifications and other contract documents are on file and open to public inspection at the office of Albright & Friel Inc., Consulting Engineers, 121 South Broad Street, Philadelphia, 7, Pennsylvania; and at the office of Harry H. Lee, Jr., 20 N. Pennsylvania Avenue, Morrisville, Pennsylvania, and sets of the plans, specifications, and contract documents may be obtained during any business hour at the office of Albright & Friel Inc., upon paying a deposit of $30.00 for each set of documents for each contract. If the documents are returned in good condition within five days after the opening of bids, the full amount of the deposit for one set of each contract will be returned to each actual bidder and other deposits will be refunded with a deduction of $15.00 for each set of each contract returned to defray the actual cost of reproduction. If the documents are not returned within the time stated, the entire amount of deposit will be forfeited.

All bids should be addressed to Mr. Harris W. Voorhees, Secretary, Municipal Authority of the Borough of Morrisville, Morrisville, Pa., and shall be placed in a sealed envelope sufficiently labeled to indicate that it is a bid for this work.

A bid bond or certified check made payable to the Municipal Authority of the Borough of Morrisville in the amount of five (5) per cent of the bid must be deposited by each bidder with his bid as a guarantee that in case any contract is awarded to him, that he will execute the contract and furnish the bond required.

The Municipal Authority of the Borough of Morrisville hereby reserves the right to refuse and reject any or all bids; and the said Municipal Authority also reserves the right to waive any informalities in bids received.

No bid may be withdrawn by the bidder for thirty (30) days after the scheduled closing time for the receipt of bids.

HARRIS W. VOORHEES
Secretary, Municipal Authority of the Borough of Morrisville, Pa.

August 31, 1951

OFFICIAL PROPOSAL

RATE: $1.25 per line (or fraction) per insertion.
CLOSING DATE: 12:00 p.m. Thursday for issue out following Thursday.
SEND COPY: Official Proposal Division, Engineering News-Record, 330 W. 42nd St., New York 18, N. Y.

OFFICIAL PROPOSALS

Bids: October 2, 1951

Treatment and Cell Block Wing

Notice is hereby given that sealed proposals will be received in the office of the Director, Division of Purchase and Property, Room 318, State House, Trenton 7, New Jersey, for the following:

General work, plumbing, heating and ventilating, electric and prison equipment for Treatment and cell block wing at the New Jersey Reformatory at Bordentown, New Jersey.

Bids for the above will be received at the office of the Director, Division of Purchase and Property, State House, W. State St., Trenton 7, New Jersey on Tuesday, October 2, 1951 at two (2:00) o'clock and will be opened and read immediately thereafter. Bids must be made on the standard proposal form, and must be accompanied by a certified check drawn to the order of the Treasurer of the State of New Jersey for not less than 5% of the amount of the bid, cash, in the amount of 5% of the bid, or a bid bond in the amount of 5% of the bid, and must be delivered at the above place on or before the hour named, as no bid will be accepted after the hour specified. Bids not submitted on the standard proposal form or enclosed in other than special addressed envelopes will be considered informal and will be rejected. The Director reserves the right to reject any and all bids and to award contract in part or whole if deemed to the best interests of the State to do so. The successful bidder will be required to qualify for surety bond in the full amount of the contract, of a company authorized to do business in the State of New Jersey.

Plans and specifications, form of bid, contract and bond for the proposed work are on file and may be obtained upon application to the Director, Division of Purchase and Property, State House, Trenton, New Jersey on deposit of twenty-five dollars ($25.00) for each set; this amount to be refunded to the bidder upon receipt of same in good condition within 30 days after the award of the contract.

DEPARTMENT OF THE TREASURY
Division of Purchase and Property
Fred V. Ferber, Director

Bids: September 26, 1951

Divided Highway Bridges

Sealed proposals will be received by the State Highway Department at its offices in Dover, Delaware, until 2:00 P. M. E. S. T. September 26, 1951, and at that time and place publicly opened and read for a contract or combination of contracts involving the following approximate quantities:

Contract 1103
Divided Highway Bridges, Records Pond
Sussex County

R. C. Concrete & Steel Structures
2.5 A. Clearing
0.3 A. Grubbing
100 C. Y. Excavation
150,000 C. Y. Borrow
L. S. Muck Excavation
620 C. Y. C. C. Masonry
220 S. Y. Waterproofing
84,000 Lbs. Reinforcing Steel
277,000 Lbs. Structural Steel
769 L. F. Steel Railing
4,500 L. F. Cast in Place Piles
150 L. F. Test Piles
2 Ea. Pile Loading Test

Contract 1104
Divided Highway Bridges,
Nanticoke River
Sussex County

R. C. Concrete & Steel Structures
4.2 A. Clearing
100 C. Y. Excavation
130,000 C. Y. Borrow
L. S. Muck Excavation
1,160 C. Y. C. C. Masonry
800 S. Y. Waterproofing
166,700 Lbs. Reinforcing Steel
529,300 Lbs. Structural Steel
1,370 L. F. Steel Railing
7,000 L. F. Cast in Place Piles
200 L. F. Test Piles
600 S. Y. Slope Protection
2 Ea. Pile Loading Test

Contract 1105
Divided Highway Bridges,
Nanticoke River, (North Fork)
Sussex County

R. C. Concrete & Steel Structures
2 A. Clearing
0.4 A. Grubbing
8,700 C. Y. Excavation
L. S. Muck Excavation
60,000 C. Y. Borrow
420 C. Y. C. C. Masonry
220 S. Y. Waterproofing
53,200 Lbs. Reinforcing Steel
167,000 Lbs. Structural Steel
489 L. F. Steel Railing
3,500 L. F. Cast in Place Piles
100 L. F. Test Piles
1 Ea. Pile Loading Test

Attention is called to the proposal form, the Special Provisions in the Proposal, Specifications and Contract Agreement. It will be noted that all three contracts are combined within the single proposal form. Bidders may submit their bids for any or all of the contracts contained within the proposal.

The employment agency for these contracts shall be the Delaware State Employment Agency, whose office is in the Wagamon Building, The Circle, Georgetown, Delaware.

Performance of contracts shall commence within ten (10) days after execution of the contracts and be completed as specified.

Monthly payments will be made for ninety (90) per cent of the construction completed each month.

Bidders must submit proposals upon forms provided by the Department.

Each proposal must be accompanied by a surety bond, certified check, or money to the amount of at least ten (10) per centum of the total amount of the proposal.

The envelope containing the proposal must be marked "Proposal for the construction of State Highway Contract No. ....."

The contracts will be awarded or rejected within twenty (20) days from the date of opening proposals. The Department reserves the right to award these contracts in any combination which will best serve the purposes of the Department.

The right is reserved to reject any or all bids.

Complete sets of plans and specifications may be obtained upon receipt of five dollars ($5.00) for each set, which amount will not be refunded.

Make checks payable to the State Highway Department.

STATE HIGHWAY DEPARTMENT
BY: J. Gordon Smith,
Chairman
Richard A. Haber, Chief Engineer
Dover, Delaware
August 29, 1951

Bids: September 26, 1951

East Market Street & Others

Sealed proposals will be received by the State Highway Department at its offices in Dover, Delaware, until 2:00 P. M. E. S. T. September 26, 1951, and at that time and place publicly opened and read for contracts involving the following approximate quantities:

Contract 1028
EAST MARKET STREET,
GEORGETOWN
Sussex County

Concrete Curbs & Surface Treated Shoulders
0.25 Mile
150 C. Y. Excavation
60 L. F. 12" R. C. Pipe
2,400 L. F. C. C. C. Curb
200 S. F. 4" C. C. Sidewalk
420 S. F. 6" C. C. Sidewalk
2 Each Catch Basins "B"
8 Each Adjusted Catch Basins
1,000 Lbs. Castings
450 S. Y. Topsoil
0.1 A. Seeding
1,150 Gal. R. C. 1 Asphalt
1,150 Gal. R. C. 3 Asphalt
50 T. Slag Chips
50 T. Crushed Chips

Contract 1078
MURRAY'S CORNER TO LEWES
Sussex County
F. A. Project S-140 (1)
22' Hot-Mix Asphalt Paving
2.348 Miles
13,000 C. Y. Excavation
500 C. Y. B. P. Stripping
11,500 C. Y. Selected Borrow
12,500 T. Waterbound Macadam
6,300 T. Hot-Mix Asphalt
3.5 C. Y. C. C. Masonry
2,200 L. F. 12" R. C. Pipe
550 L. F. 15" R. C. Pipe
100 L. F. 4" Vit. Clay Pipe
50 L. F. 10" Vit. Clay Pipe
150 L. F. C. C. Curb
6,650 L. F. Int. Curb & Gutter
31,000 S. F. 4" C. C. Sidewalk
2,750 S. F. 6" C. C. Sidewalk
30 Each Catch Basins "A"
8 Each Catch Basins "B"
8 Each Adjusted Catch Basins
5 Each Manholes
10 Each Adjusted Manholes
21,500 Lbs. Castings
L. S. Topsoil
L. S. Seeding
250 S. Y. Sodding
1,200 Gal. R. C. 1 Asphalt
1,200 Gal. R. C. 3 Asphalt
50 T. Slag Chips
50 T. Crushed Chips
1,600 S. F. Reset Brick Sidewalk
1,700 L. F. Ditching
60 Each Removal Trees
5 T. Calcium Chloride

Contract 1155
NYLON BOULEVARD SAFETY ISLAND
Seaford, Sussex County
100 C. Y. Excavation
50 C. Y. Selected Borrow
25 C. Y. C. C. Pavement
200 L. F. C. C. Parkway Curb
1,100 S. F. 4" C. C. Sidewalk
120 S. Y. Topsoil
0.03 A. Seeding

Contract 1078 is a Federal Aid Project and the provisions of the Federal Highway Act, as amended, are applicable thereto.

The Employment Agency for these Contracts shall be the Delaware Employment Service, Wagamon Building, The Circle, Georgetown, Delaware.

Attention is called to the Special Provisions in the Proposal, Specifications and Contract Agreement.

Performance of contract shall commence within ten (10) days after execution of the contract and be completed as specified.

Monthly payments will be made for ninety (90) per cent of the construction completed each month.

Bidders must submit proposals upon forms provided by the Department.

Each proposal must be accompanied by a surety bond, certified check, or money to the amount of at least ten (10) per centum of the total amount of the proposal.

The envelope containing the proposal must be marked "Proposal for the construction of State Highway Contract No. ....."

The Contract will be awarded or rejected within twenty (20) days from the date of opening proposals.

The right is reserved to reject any or all bids.

Complete sets of plans and specifications may be obtained upon receipt of five dollars ($5.00) for each set, which amount will not be refunded.

Make checks payable to the State Highway Department.

STATE HIGHWAY DEPARTMENT
BY: J. Gordon Smith,
Chairman
R. A. Haber, Chief Engineer
Dover, Delaware
August 29, 1951

U. S. Government

UNITED STATES DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. DC-3533) will be received by Bureau of Reclamation, Denver, Colorado, until October 2, 1951, and then publicly opened for furnishing labor and materials and performing all work for the construction of earthwork, pipe lines, and structures, laterals 59.8S, 61.1S, 62.8W, and 64.5W and sublaterals, Stone Corral irrigation district, Friant-Kern Canal distribution system, Central Valley Project, California. The work is situated approximately 10 miles southeast of Dinuba, California. Principal items are approximately: excavation and backfill of approximately 19 mi. of pipe trench; construction of approximately 19 mi. of precast-concrete pipe varying from 12-inch to 30-inch diameter; approximately 600 cu. yds. of concrete; furnishing and installing approximately 38,000 lbs. of pumping units, valves, piping, and miscellaneous metalwork; and other work. Time allowed for completion will be 315 days. For particulars, address Bureau of Reclamation, Lindsay, California; or Building 53, Denver Federal Center, Denver, Colorado.

READ THE OFFICIAL
PROPOSAL COLUMNS OF
ENGINEERING NEWS-RECORD
THIS WEEK AND EVERY WEEK

OFFICIAL PROPOSALS

Bids: September 25, 1951

Roadway Work New Jersey

STATE OF NEW JERSEY
STATE HIGHWAY DEPARTMENT
TRENTON

NOTICE IS HEREBY GIVEN that sealed bids will be received by the State Highway Commissioner for:

ROUTE 28, SECTION 30

Construction of Route 28, Section 30, Bethlehem-Union Township Line to the New Jersey Women's Reformatory in Bethlehem and Union Townships, Hunterdon County. Federal Project No. FI-64(9). Length 4.294 miles.

The principal items of construction are:

ROADWAY ITEMS

(Applying to Alternatives "A" and "B") Estimated:

18,100 sq. yds. Pavement Excavation
4,500 cu. yds. Rock Excavation—Subsurface Structures
8,500 cu. yds. Subbase
31,300 sq. yds. Macadam Base Course
31,300 sq. yds. Waterbound Macadam—Intermediate Course
5,100 tons Bituminous Concrete Pavement, Type MA-BC
19,800 lin. ft. Reinforced Concrete Culvert Pipe
114 Manholes & Inlets
11,600 lin. ft. White Concrete Curb

ROADWAY ITEMS
(Alternative "A")

408,800 cu. yds. Roadway Excavation — Unclassified
43,000 cu. yds. Subbase
78,300 sq. yds. 10" Plain Concrete Pavement

ROADWAY ITEMS
(Alternative "B")

415,500 cu. yds. Roadway Ecavation — Unclassified
43,500 cu. yds. Subbase
81,600 sq. yds. Waterbound Macadam — Base Course
81,600 sq. yds. Waterbound Macadam — Intermediate Course
12,500 tons Bituminous Concrete Pavement, Type MA-BC

BRIDGE ITEMS

590 cu.yds. Channel Excavation
1,638 cu. yds. Foundation Excavation
2,200 cu. yds. Concrete in Structures
58,870 lbs. Reinforcement Steel in Structures
161,300 lbs. Structural Steel

Bids for the above will be received at the office of the State Highway Department, Assembly Room, Room 110, in the State Highway Office Building, 1035 Parkway Avenue, Trenton, N. J., on Tuesday, September 25, 1951, at ten o'clock (10:00 A.M. —EASTERN STANDARD TIME), eleven (11:00 A.M. — DAYLIGHT SAVING TIME), and will be opened and read immediately thereafter.

The receipt and opening of bids is subject to the proper qualification of the bidder in accordance with the provisions of the prequalification law and the regulations adopted by the State Highway Commissioner. Bidders may also submit a revised financial statement and statement of plant and equipment with their bid.

NOTE: The proposed project is a "Federal Aid Project" authorized by the provisions of Title 27 of the Revised Statutes of New Jersey and supplements and by Section 1, P. L. 834, 80th Congress, and is to be performed in accordance with the special provisions and requirements of the Bureau of Public Roads, Department of Commerce, as outlined in the specifications, which provisions require that labor be employed from lists furnished by the State Employment Service, Municipal Building—South Main Street, Phillipsburg, New Jersey—Telephone: Phillipsburg 5-1104. The attention of bidders is directed to the special provisions covering subletting or assigning the contract. The minimum wage paid to all common labor employed on this contract shall be $1.75 per hour. The minimum wage paid to all intermediate grade of labor employed on this contract shall be $1.00 per hour. The minimum wage paid to all skilled labor employed on this contract shall be $1.50 per hour.

Drawings, specifications and form of bid, contract and bond for the proposed work are on file in the office of the State Highway Department, Trenton, N. J., and may be insnected by prospective bidders during office hours. Plans will be furnished on a deposit of Ten Dollars ($10.00) for each set of plans upon application to A. Lee Grover, Chief Clerk, State Highway Department, Room 139, State Highway Office Building, 1045 Parkway Avenue, Trenton, N. J. Bids must be made upon the standard proposal forms in the manner designated in the standard State Highway specifications and must be enclosed in sealed special addressed envelope bearing the name and address of the bidder and work bid upon on the outside, and must be accompanied by a certified check drawn to the order of the Treasurer of the State of New Jersey for not less than ten percent (10%) of the amount of the bid, provided that the said certified check shall not be less than $500.00 nor more than $20,000.00 and must be delivered at the above place on or before the hour named. Copies of the standard proposal forms and special addressed envelopes will be furnished on application. Bids not enclosed in sealed special addressed envelopes will be considered informal and will not be opened. The right is reserved to reject any or all bids.

Signed: R. J. Abbott
State Highway Commissioner

Bids: November 8, 1951

Water Supply From Stony Creek

EARTH DAM
SECTIONS 3A, 3B and 3C
ADDITIONAL WATER SUPPLY
FROM
STONY CREEK
FOR THE
LATHAM WATER DISTRICT
TOWN OF COLONIE, NEW YORK

Sealed bids will be received by the Town Board of the Town of Colonie, New York, until 7:30 P.M., E.S.T., on the 8th day of November, 1951, at the Temporary Town Hall on the West side of the Loudon Road, between the Troy-Shaker Road and the Troy-Schenectady Road, for furnishing all labor, material and equipment and constructing complete an earth dam with a concrete core wall, sheet pile cut-off, outlet works, spillway, etc. for the Additional Water Supply from Stony Creek for the Latham Water District. The bids will be publicly opened and read aloud.

The work has been divided into three sections as follows:

Section 3A—For furnishing sheet piling.
Section 3B—For installing sheet piling and the necessary excavation therefor.
Section 3C—For constructing earth dam with concrete core wall, spillway, outlet works, etc.

Contractors may bid on any or all of the three sections.

The Information for Bidders, Form of Bid, Form of Contract, plans, Specifications and Performance Bond may be examined at the office of the Town Clerk, Latham, New York, and at the office of Keis & Holroyd, 257 Broadway, Troy, New York, and copies thereof may be obtained at the office of Keis & Holroyd upon payment of $25.00 for each set. Any bidder upon returning such set promptly and in good condition, will be refunded his payment and any non-bidder upon so returning such set within 30 days will be refunded $20.00.

The Town Board of the Town of Colonie, New York, reserves the right to waive any informalities in or to reject any or all bids.

A certified check made payable to the order of the Town of Colonie, in the amount of Five Per Centum (5%) of the bid must be deposited by each bidder with his bid as a guarantee that in case the Contract is awarded to him, that he will, within 5 days thereafter, execute such contract and furnish a satisfactory performance bond. On failure to do so, he shall forfeit the deposit as liquidated damages and acceptance of the bid will be contingent upon the fulfillment of this requirement by the bidder.

The successful bidder will be required to furnish a performance bond satisfactory to the Town of Colonie, New York, in the amount of the contract and having as surety thereon, such surety company or companies as are acceptable to the Town of Colonie, New York.

No bidder may withdraw his bid within 30 days after the date set for the opening thereof. Any bid may be withdrawn prior to the above scheduled time for the opening of bids or authorized postponement thereof.

WILLIAM K. SANFORD
Supervisor

Keis & Holroyd
Consulting Engineers
Troy, New York
Dated: August 30, 1951.

OFFICIAL PROPOSALS

Bids: September 24, 1951

Prison Wing Dormitory

Notice is hereby given that sealed proposals will be received in the office of the Director, Division of Purchase and Property, Room 318, State House, Trenton 7, New Jersey, for the following:

General work, plumbing, heating and ventilating, electric and structural steel for new Dormitory addition (appropriation reads: "Prison Wing Dormitory") at the State Prison Farm at Rahway, New Jersey.

Bids for the above will be received at the office of the Director, Division of Purchase and Property, State House, W. State St., Trenton 7, New Jersey on Monday, September 24, 1951 at one (1:00) o'clock, E.S.T. and will be opened and read immediately thereafter.

Bids must be made on the standard proposal form, and must be accompanied by a certified check drawn to the order of the Treasurer of the State of New Jersey for not less than 5% of the amount of the bid, cash, in the amount of 5% of the bid or a bid bond in the amount of 5% of the bid, and must be delivered at the above place on or before the hour named, as no bid will be accepted after the hour specified. Bids not submitted on the standard proposal form or enclosed in other than special addressed envelopes will be considered informal and will be rejected. The Director reserves the right to reject any and all bids and to award contract in part or whole if deemed to the best interests of the State to do so. The successful bidder will be required to qualify for surety bond in the full amount of the contract, of a company authorized to do business in the State of New Jersey.

Plans and specifications, form of bid, contract and bond for the proposed work are on file and may be obtained upon application to the Director, Division of Purchase and Property, State House, Trenton, New Jersey on deposit of twenty-five dollars ($25.00) for each set; this amount to be refunded to the bidder upon receipt of same in good condition within 30 days after the award of the contract.

DEPARTMENT OF THE TREASURY
Division of Purchase and Property
Fred V. Ferber, Director.

Bids: September 24, 1951

Repairing and Painting Two Water Tanks

THE PORT OF NEW YORK AUTHORITY
PORT NEWARK
CONTRACT PN-140.004

Sealed proposals for repairing and painting two water tanks at Port Newark, Newark, N. J., will be received at the office of the Chief Engineer of The Port of New York Authority, Room 1100, 111 8th Ave., New York 11, until 11:30 A.M., Monday, Sept. 24, 1951 at which time and place said proposals will be opened and read.

Contract documents may be seen at the office of the Chief Engineer and copies will be furnished upon deposit of $10 per set. The deposit will be remitted if the documents are returned in good condition, not later than 30 days after the opening of proposals.

THE PORT OF NEW YORK AUTHORITY
Howard S. Cullman, Chairman
New York, September 13, 1951.

Bids: Sept. 24, 1951

Electrical Installation for Buildings No. 142 and 143

THE PORT OF NEW YORK AUTHORITY
PORT NEWARK
CONTRACT PN-180.004

Sealed proposals for the furnishing and installation of electrical systems in Buildings No. 142 and 143 at Port Newark, Newark, N. J., will be received at the office of the Chief Engineer of the Port of New York Authority, Room 1100, 111 8th Ave., New York 11, until 11:45 A.M. Monday, Sept. 24, 1951, at which time and place said proposals will be opened and read.

Contract documents may be seen at the office of the Chief Engineer and copies will be furnished upon deposit of $10 per set. The deposit will be remitted if the documents are returned in good condition, not later than 30 days after the opening of proposals.

THE PORT OF NEW YORK AUTHORITY
Howard S. Cullman, Chairman
New York, September 13, 1951.

OFFICIAL PROPOSALS

Bids: September 17, 1951

State Village for Epileptics

Notice is hereby given that sealed proposals will be received in the office of the Director, Division of Purchase and Property, Room 318, State House, Trenton 7, New Jersey, for the following:

General work, plumbing, heating and ventilating, electric, structural steel and miscellaneous iron work, refrigeration and food service equipment for a new Men's Group, Women's Group and Bergen Group at the State Village for Epileptics at Skillman, New Jersey.

Bids for the above will be received at the office of the Director, Division of Purchase and Property, State House, W. State St., Trenton 7, New Jersey on Monday, September 17, 1951 at one (1:00) o'clock, E.S.T. and will be opened and read immediately thereafter.

Bids must be made on the standard proposal form, and must be accompanied by a certified check drawn to the order of the Treasurer of the State of New Jersey for not less than 5% of the amount of the bid, cash, in the amount of 5% of the bid or a bid bond in the amount of 5% of the bid, and must be delivered at the above place on or before the hour named, as no bid will be accepted after the hour specified. Bids not submitted on the standard proposal form or enclosed in other than special addressed envelopes will be considered informal and will be rejected. The Director reserves the right to reject any and all bids and to award contract in part or whole if deemed to the best interests of the State to do so. The successful bidder will be required to qualify for surety bond in the full amount of the contract, of a company authorized to do business in the State of New Jersey.

Plans and specifications, form of bid, contract and bond for the proposed work are on file and may be obtained upon application to the Director, Division of Purchase and Property, State House, Trenton, New Jersey on deposit of twenty-five dollars ($25.00) for each set; this amount to be refunded to the bidder upon receipt of same in good condition within 30 days after the award of the contract.

DEPARTMENT OF THE TREASURY
Division of Purchase and Property
Fred V. Ferber, Director.

Bids: September 19, 1951

West Atchafalaya Floodway

Sealed bids for furnishing, labor and material and performing all work to construct compacted portion of embankment in high level crossing over the West Atchafalaya Floodway for Guy A. Thompson, Trustee, New Orleans, Texas & Mexico Railway Company, Debtor, between Krotz Springs and Corbabeu, St. Landry Parish, Louisiana, requiring approximately 1,280,000 cubic yards of borrow material, will be received by C. S. Kirkpatrick, Chief Engineer, 204 Union Station, Houston, Texas, until 10 A.M., Central Standard Time, 19 September 1951, and then publicly opened. August 22, 23, 24 and 25.

September 16 and 17.

U. S. Government

UNITED STATES DEPARTMENT OF THE INTERIOR, BUREAU OF RECLAMATION. NOTICE IS HEREBY GIVEN that sealed bids on Invitation No. 7603S-207 for furnishing and delivering structural steel for Chadron substation, Transmission Division, Nebraska, Missouri River Basin Project, will be mailed to P. O. Box 280, Casper, Wyoming or delivered to the office of the Bureau of Reclamation in time for the public opening at 10 a.m., Mountain Standard Time, September 27, 1951, at the office of the Bureau of Reclamation, Reclamation Center, Casper, Wyoming.

Copies of the standard forms and of the invitation may be obtained from the following offices of the Bureau of Reclamation: Avery A. Batson, Regional Director, Building 46, Denver Federal Center, Denver, Colorado; and I. J. Matthews, District Manager, P. O. Box 280, Casper, Wyoming. No charge for copies of the invitation and drawings furnished for bidding purposes; for all other $0.50 per copy, not returnable. Payments should be made by check or money order payable to the Treasurer of the United States.

OFFICIAL PROPOSALS

Bids: September 25, 1951

New Brunswick Intersection

STATE OF NEW JERSEY
STATE HIGHWAY DEPARTMENT
TRENTON

NOTICE IS HEREBY GIVEN that sealed bids will be received by the State Highway Commissioner for:

Route 25 (1927), Section 4-E
Intersection Revision at Route S-28, City of New Brunswick, Middlesex County.
Length 0.128 miles.

Estimated:
- 5,223 cu. yds. Roadway Excavation
- 5,752 sq. yds. Pavement Excavation
- 2,803 cu. yds. Subbase
- 210 tons Bituminous Concrete Pavement Type MA-BC-1
- 4,644 sq. yds. 10" Reinforced Concrete Pavement
- 2,665 sq. yds. 10" Plain Concrete Pavement
- 17 Electric Sign Installations
- 2,945 Lin. ft. Wrought Iron Pipe, Electric Conduit

Bids for the above will be received at the office of the State Highway Department, Assembly Room, Room 140, in the State Highway Office Building, 1035 Parkway Avenue, Trenton, New Jersey, on Tuesday, September 25, 1951, at ten o'clock (10:00 A.M.—EASTERN STANDARD TIME), eleven o'clock (11:00 A.M.—DAYLIGHT SAVING TIME), and will be opened and read immediately thereafter.

The receipt and opening of bids is subject to the proper qualification of the bidder in accordance with the provisions of the prequalification law and the regulations adopted by the State Highway Commissioner. Bidders must also submit a revised financial statement and statement of plant and equipment with their bid.

Drawings, specifications and form of bid, contract and bond for the proposed work are on file in the office of the State Highway Department, Trenton, N. J., and may be inspected by prospective bidders during office hours. Plans will be furnished on a deposit of Ten Dollars ($10.00) for each set of plans upon application to A. Lee Grover, Chief Clerk, State Highway Department, Room 139, State Highway Office Building, 1035 Parkway Avenue, Trenton, N. J. Bids must be made upon the standard proposal forms in the manner designated in the standard proposal specifications and must be enclosed in sealed special addressed envelopes bearing the name and address of the bidder and work bid upon on the outside, and must be accompanied by a certified check drawn to the order of the Treasurer of the State of New Jersey for not less than ten percent (10%) of the amount of the bid, provided that the said certified check shall not be less than $500.00 nor more than $20,000.00 and must be delivered at the above place on or before the hour named. Copies of the standard proposal forms and special addressed envelopes will be furnished on application. Bids not enclosed in sealed special addressed envelopes will be considered informal and will not be opened. The right is reserved to reject any or all bids.

Signed. R. J. Abbott
State Highway Commissioner

Bids: September 25, 1951

Landscape Improvement

STATE OF NEW JERSEY
STATE HIGHWAY DEPARTMENT
TRENTON

NOTICE IS HEREBY GIVEN that sealed bids will be received by the State Highway Commissioner for:

LANDSCAPE IMPROVEMENT, RT. 56, SEC'S. 1-A & 2-A

Landscape Improvement on Route 56, Sections 1-A & 2-A, from Venice Lagoon to Adriatic Ave., City of Atlantic City, Atlantic County. Length 1.345 miles.

Estimated:
- 242 units Trees—Deciduous
- 17 units Trees—Small & Flowering
- 3,616 units Shrubs
- 5,389 units Perennials
- 960 cu. yds. Topsoil

Bids for the above will be received at the office of the State Highway Department, Assembly Room, Room 140, in the State Highway Office Building, 1035 Parkway Avenue, Trenton, New Jersey, on Tuesday, September 25, 1951, at ten o'clock (10:00 A.M.—EASTERN STANDARD TIME), eleven o'clock (11:00 A.M.—DAYLIGHT SAVING TIME), and will be opened and read immediately thereafter.

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Signed. R. J. Abbott
State Highway Commissioner

OFFICIAL PROPOSALS

SAVING TIME), and will be opened and read immediately thereafter.

The receipt and opening of bids is subject to the proper qualification of the bidder in accordance with the provisions of the prequalification law and the regulations adopted by the State Highway Commissioner. Bidders must also submit a revised financial statement and statement of plant and equipment with their bid.

Drawings, specifications and form of bid, contract and bond for the proposed work are on file in the office of the State Highway Department, Trenton, N. J., and may be inspected by prospective bidders during office hours. Plans will be furnished on a deposit of Ten Dollars ($10.00) for each set of plans upon application to A. Lee Grover, Chief Clerk, State Highway Department, Room 139, State Highway Office Building, 1035 Parkway Avenue, Trenton, N. J. Bids must be made upon the standard proposal forms in the manner designated in the standard State Highway Specifications and must be enclosed in sealed special addressed envelopes bearing the name and address of the bidder and work bid upon on the outside, and must be accompanied by a certified check drawn to the order of the Treasurer of the State of New Jersey for not less than ten percent (10%) of the amount of the bid, provided that the said certified check shall not be less than $500.00 nor more than $20,000.00 and must be delivered at the above place on or before the hour named. Copies of the standard proposal forms and special addressed envelopes will be furnished on application. Bids not enclosed in sealed special addressed envelopes will be considered informal and will not be opened. The right is reserved to reject any or all bids.

Signed. R. J. Abbott
State Highway Commissioner

U. S. Government

Office of the District Engineer, Corps of Engineers, U. S. Army, 1217 U. S. Post Office and Custom House, St. Paul 1, Minnesota.—Sealed bids, in triplicate, for furnishing all labor and materials and performing all work required for Construction and Delivery of Two (2) Side Dump Scows at the Corps of Engineers Boatyard, Fountain City, Wisconsin, will be received in this office until 11:00 A.M., C.S.T., 4 October 1951, and then publicly opened. Further information upon application.

NEW ORLEANS DISTRICT, CORPS OF ENGINEERS, Foot of Prytania St., New Orleans 9, La.—Sealed bids will be received in this office until 11:00 a.m., CST, October 16, 1951, and then publicly opened for construction of Bayou Boef Lock, St. Mary Parish, La., New Orleans District. The principal features involved are approximately 300,000 cubic yards of earthwork, 12,000 cubic yards of concrete, 1,147,000 pounds of steel reinforcement, 22,140 square feet of steel sheet piling, 3,700 linear feet of timber guide walls, 2 sets of structural steel sector gates, electrical work and operating machinery. Further information on application.

OFFICIAL PROPOSALS

Bids: October 1, 1951

Postponement of Bid Date
Lincoln Tunnel
Third Tube

THE PORT OF NEW YORK AUTHORITY
MANUFACTURE, STORAGE AND DELIVERY OF CAST IRON AND CAST STEEL TUNNEL LINING
CONTRACT LT-160.001

Sealed proposals for the manufacture, storage and delivery of cast iron and cast steel tunnel lining for the Third Tube of the Lincoln Tunnel will be received at the office of the Chief Engineer of The Port of New York Authority, Room 1100, 111-8th Ave., New York 11, until 2:00 P.M., Monday, October 1, 1951, at which latter time and place said proposals will be opened and read.

Contract documents may be seen at the office of the Chief Engineer and copies will be furnished upon deposit of $25 per set. The deposit will be remitted if the documents are returned in good condition, not later than 30 days after the opening of proposals.

THE PORT OF NEW YORK AUTHORITY
Howard S. Cullman, Chairman
New York, September 13, 1951

SEARCHLIGHT SECTION

Classified Advertising

EMPLOYMENT: BUSINESS: **"OPPORTUNITIES"** :EQUIPMENT :USED OR RESALE

UNDISPLAYED RATE

$1.50 a Line, minimum 3 lines. To figure advance payment count 5 average words as a line.
POSITION WANTED and Individual Selling Opportunity undisplayed rate is one-half of above rate, payable in advance.
Box Numbers in care of our New York, Chicago and San Francisco Offices count as one additional line.
Replies are forwarded each day as received at each of the offices mentioned without additional charge.

New Advertisements received by September 17th will appear in the Sept. 27th issue.

Discount of 10% is allowed if full payment is made in advance for 4 consecutive insertions.

EQUIPMENT WANTED or FOR SALE Advertisements acceptable only in Displayed Style.

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The advertising rate $14.25 per inch for all advertising appearing on other than a contract basis. Contract rate quoted on request.
An advertising inch is measured ⅞ inch vertically on one col. — 3 col. — 30 inches to a page. E.N.R.

DESIGNERS

We need men with experience as:

Structural Designers
Concrete Designers
Electrical Designers
Piping Designers
Checkers

Men should have experience in Blast Furnaces, Steel Mill, Oil Refinery or other heavy structural design.

Positions available in our offices at Cleveland, Ohio, and Union, New Jersey.

We pay among highest rates, plus annual profit sharing bonus.

Our continuous expansion and growth offers many fine future opportunities.

Write.

ARTHUR G. McKEE & Co.
2300 Chester Ave., Cleveland 1, Ohio

ENGINEERS
WANTED

The Tennessee Valley Authority wants Civil, Structural, Mechanical, Electrical and Office Engineers. The work is design and construction of large steam-electric and hydroelectric projects and transmission systems. Salaries start at $3200, $3900 and $4650 for 40-hour week. Some work is scheduled more than 40 hours and pays overtime. All jobs carry automatic within-grade increases for satisfactory service, liberal vacation leave, sick leave and retirement benefits. Design jobs are in Knoxville and Chattanooga, Tennessee. Field and office engineer jobs are at construction sites in the Tennessee Valley area and at Paducah, Kentucky.

Write the
Tennessee Valley Authority
Division of Personnel
KNOXVILLE, TENNESSEE

REPLIES (Box No.): Address to office nearest you
NEW YORK: 330 W. 42nd St. (18)
CHICAGO: 520 N. Michigan Ave. (11)
SAN FRANCISCO: 68 Post St. (4)

POSITIONS VACANT

DRAFTSMAN OR Engineer—preferably with civil engineering or building construction experience. Permanent position with excellent opportunity for advancement with contractor doing national business. State age, education, experience and salary expected. P-1851, Engineering News-Record.

STRUCTURAL ENGINEER: Experienced in steel and reinforced concrete design, for large, well established, Architect-Engineer office in Pacific Northwest. Must be capable of assuming responsibility for design of commercial and industrial buildings. P-1738, Engineering News-Record.

STRUCTURAL STEEL Detail Draftsman and Checker. All types of Structures. Vacation and bonus plan, group insurance, good working conditions. Only top quality men. Send complete written information. Samborn, Steketee and Associates, 1214 Cherry Street, Toledo 4, Ohio.

WANTED: FOR Field work, a graduate Civil or Mining Engineer with some experience in road building and construction. Age 30 to 40, good health knowledge of Spanish essential. Location—Caribbean. Please write stating education, experience, references, etc. P-1905, Engineering News-Record.

CHIEF ENGINEER Wanted. District office of major, nation wide construction company has opening for top flight man. Must be completely familiar with estimating, bidding and cost analysis on both heavy construction and building contracts. Only applicants with proven broad experience will be considered. Age 35 to 50. Location, Pacific Northwest. Salary open. Send photo and complete resume. Box P-1825, Engineering News-Record, 68 Post Street, San Francisco 4, California.

ENGINEERING COMPUTOR and Draftsman—Good experience record required. Thorough experience with electric computing machine and use of plan system of coordinates. Work involved is subdivision of large tracts of land into small lots. Familiarity with curvilinear road layouts and curve intersections required. Work is located at Morrisville, Pennsylvania. Phone Manhassett 7-0777. C. A. Monroe, 1900 Northern Boulevard, Manhasset, N. Y.

HEATING AND Refrigeration Engineer wanted. Must be capable of handling mechanical layout, design, and supervision of such installation. Locations of offices served are Racine, Wisconsin; Waukegan, Illinois; Lake Forest, Illinois; and Evanston, Illinois. Pay commensurate with ability. The firm is one of the largest plumbing, heating and refrigeration companies between Chicago and Milwaukee, and is expanding its services yearly. Stiles & Horne, Inc., 648 North Western Ave., Lake Forest, Illinois.

CONTRACTOR'S ENGINEER — Estimator. Thoroughly experienced in office and field in heavy construction work. Eastern area. Write full qualifications and salary experience. P-1869, Engineering News-Record.

CONSTRUCTION SUPERINTENDENT experienced in concrete paving, grading, and drainage work. Permanent basis with well established contracting firm. Work centered in deep South. P-1884, Engineering News-Record.

POSITIONS WANTED

SUPT. HEAVY Constr. 20 yrs. experience, airport, bridges, asphalt, and concrete highways, estimating and field engineering. Available Sept. 15. PW-1890, Engineering News-Record.

(Continued on page 126)

PRESTRESSED CONCRETE DESIGNERS

FOR PERMANENT POSITIONS WITH GROWING FIRM

Several Senior designers with minimum of 6 year reinforced concrete and structural design experience as well as Senior and Junior draftsmen.

P-1865, Engineering News-Record
330 W. 42 St., New York 18, N. Y.

DESIGNERS
DRAFTSMEN
RESIDENT ENGINEERS

MEN EXPERIENCED IN HYDRAULIC AND SANITARY PROJECTS

LOCATIONS: NEW YORK CITY UNION AND MIDDLESEX COUNTIES, NEW JERSEY

GIVE QUALIFICATIONS EXPERIENCE, DATE AVAILABLE

ELSON T. KILLAM
HYDRAULIC & SANITARY ENGINEERS
140 CEDAR ST. N. Y. 6 N. Y. — 529 MILLBURN AVE. SHORT HILLS, N. J.

DESIGNERS AND DRAFTSMEN
START NOW
To Plan For Your Future!
PERMANENT POSITIONS

at good salaries with all employee benefits, including retirement plan. Location—Phila. Exp. on water works projects desirable but not essential. If you have had exp. on reinforced concrete and structural steel design or piping, submit record of exp., salary requirement and availability.

P-1664, Engineering News-Record
330 W. 42 St., New York 18, N. Y.

PLANT & MAINTENANCE ENGINEER

Experienced, for work in continental United States. Some traveling necessary. State salary expected, age, experience and date available for work. Write

Box ENR 1159, 221 W. 41 St., N. Y. 18.

ESTIMATOR-OFFICE ENGINEER
BUILDING CONSTRUCTION
Located: Mid-Southern city

Need man experienced in quantity surveys awarding sub-contracts, and office procedure. Submit complete experience record and sample of handwriting. References will be kept confidential if requested.
Unusual opportunity for good man to share in profits of growing concern in growing city.

P-1874, Engineering News-Record
520 N. Michigan Ave., Chicago 11, Ill.

SALARIED POSITIONS $3,500—$35,000

We offer the original personal employment service (established 41 years.) Procedure of highest ethical standards is individualized to your personal requirements. Identity covered; present position protected. Ask for particulars.

R. W. BIXBY, Inc., 272 Dun Bldg., Buffalo 2, N.Y.

ELECTRICAL ENGINEERS

The Austin Company invites applications from progressive young graduate electrical engineers with two to five years' practical experience in electrical engineering work.

This group will be placed immediately in a training course at our Cleveland Office. Instruction in electrical engineering design for modern industrial plants will be given by our engineering staff and will include a review of the broader phases of our business. Inspection trips will be made to important electrical installations.

Full compensation and reasonable expense allowance will be furnished during the training course.

After completion of this program, engineers will be placed on the engineering staff of one of our eight regional offices.

We have above average working conditions, established vacation and sick leave plans, also paid holidays.

Please give full particulars as to education, experience, and salary desired in first letter.

We also have openings for engineers with long experience in electrical design for large industrial plants.

THE AUSTIN COMPANY, 16112 Euclid Avenue, Cleveland 12, Ohio

MACHINE DESIGNERS

Experienced On

Heavy & Light Automatic Equipment

and

Loading & Unloading Devices

Exceptional Opportunity For High Grade Men on A Long Term Program. Give Full Particulars In Writing.

The B-U-D-D CO.

Employment Service Dept.

2450 Hunting Park Ave.
Philadelphia 32, Pa.

ENGINEERS

Chemical - Mechanical - Piping - Process

Long term openings in permanent offices located at Cleveland, Ohio and Frederick, Maryland offering good salary plus overtime (forty eight hour week) for qualified Engineers, Group Leaders and Designers experienced in one or more of the following phases of industrial plant design:

Process Piping	Plumbing	Heating and Ventilation
Instrumentation	Tanks and Vessels	Refrigeration
Process Equipment Layout	Boiler Houses	Sprinklers
Packaging	Plant Layout	Water Treatment
Air Conditioning	Conveyors	

Limited number of openings for Estimators experienced in Mechanical and Chemical installations as well as building construction.
Also have a number of openings in our Cincinnati and New York City offices for similar type personnel.

Excellent working conditions with paid vacations, sick leave plan and participating Group Insurance Program.
Please submit complete resume stating experience, education, salary required and date available to:

The H. K. FERGUSON COMPANY
Engineers and Builders
FERGUSON BUILDING — CLEVELAND 14, OHIO

WANTED

Construction Engineer

(Mechanical or civil) for process plant. Experienced in heavy construction, including buildings, piping, and machinery installation.

ALSO, DESIGN ENGINEER

(Mechanical or civil) for process industry. Familiar in heavy industry plant construction, including design, equipment specifications, and machinery installations.

These positions in a modern, expanding plant in northern Ohio River valley. Attractive insurance and pension plans, desirable community, excellent opportunities for competent men.

P-1782, Engineering News-Record
520 N. Michigan Avenue, Chicago 11, Ill.

RESEARCH ENGINEER

For Prefabricated Homes Industry
To Replace Engineer Now in U.S. Naval Service

REQUIREMENTS: Knowledge of chemistry, physics, testing physical properties in construction field, particularly quality control. Must have desire and ability to conduct experiments to seek out and develop new materials to improve quality and reduce costs. Complete research files from 1935 available. If you have initiative, ability, enthusiasm, imagination and foresight with an honest and sincere desire to promote home prefabrication correspond with us at once.

PERSONNEL SUPERVISOR

Harnischfeger Corporation

Houses Division
NORTH SPRING STREET — PORT WASHINGTON, WISCONSIN

Additional Positions Vacant Ads on Page 126

BUILDING AND PLANT LAYOUT DESIGNER

Permanent opening, upstate New York location. C. E. degree required. Prefer licensed Professional Engineer and land surveyor with about 10 years experience in the design of buildings, plant and building layout, drainage systems, building services and architectural work for industrial plants. Please send brief resume to

P-1858, Engineering News-Record
330 W. 42 St., New York 18, N. Y.

PROJECT MANAGERS CONSTRUCTION SUPERINTENDENTS

Project Managers capable of supervising design and construction of multi-million dollar industrial projects required for long term opportunities with established nationally known firm.

Must be experienced in complete supervision of such projects as Power Plants, Paper and Pulp Mills, Chemical Plants, Heavy Manufacturing facilities, etc.

Construction Superintendents with similar experience required for smaller projects.

In first letter, give full details concerning experience and education together with availability and salary requirements. All replies confidential.

P-1844, Engineering News-Record
330 W. 42 St., New York 18, N. Y.

Fire Protection ENGINEERING

An expanding field with a top-flight organization.

RECENT GRADUATES

Wanted to train as fieldmen. Send personal resume to:

P-1783, Engineering News-Record
330 W. 42nd Street, New York 18, N. Y.

CONSTRUCTION SUP'T & ENGINEER

Technical college graduate, well-experienced in building construction and installation of equipment; willing to travel to locations in United States. State age, salary expected, experience in detail, and date available to begin to work. Write

Box ENR 1157, 221 W. 41 St. N. Y. 18

RECENT ENGINEERING GRADUATE FOR GENERAL BUILDING CONTRACTOR

Located: Mid-south city

Prefer structural or architectural engineer with aptitude for detail work to act as assistant to executive of moderate sized construction company. No previous construction experience necessary but preferred. Submit complete history, picture, sample of handwriting, references, etc.

P-1873, Engineering News Record
520 N. Michigan Ave., Chicago 11, Ill.

PHOTOGRAMMETRIST

State of California Start $341

Four years experience professional or subprofessional civil engineering including one year in photogrammetry. CE degree will substitute for half of engineering experience. Residence not required.

Apply Dept. ENR, State Personnel Board,
1015 L Street Sacramento, California

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Fortieth Year

OUR COURSES HAVE HELPED THOUSANDS to better positions and to pass State Board Examinations

- Complete Structural Engineering Course.
- Public Works Structures.
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- Special Course C (State Board Exams).
- Reinforced Concrete Engineering.
- Structural Steel Designing.

Monthly payments permissible. Information sent without obligation. WRITE TODAY

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College House Offices • Harvard Square • Cambridge, Mass., U. S. A.

POSITIONS WANTED

(Continued from page 124)

AUSTRALIAN ENGINEER 44 AMI Mech. E., AMI Struct. E. Shortly returning to Australia. Requires work Mechanical or Structural Design or Construction with firm having branch or contract in Australia. Experienced Chemical works design. PW-1892, Engineering News-Record.

CONCRETE specialist, design and construction, 30, to assist chief engineer, project leader, or take charge designing group or research. PW-1893, Engineering News-Record.

ENGINEER, MEM. A.S.C.E., age 48, 25 years building construction experience desires position as Field Representative for Engineering or Architectural firm. PW-1651, Engineering News-Record.

CIVIL ENGINEER—28 years well rounded experience in construction and design of heavy construction of varied types incl. water front work desires top level position. PW-1798, Engineering News-Record.

SUPERINTENDENT: 30 Years with contractors. Concrete frame structures. Schools, Hospitals, Industrial, Power, Sewage, Water treatment plants, Steel and Cement mills. PW-1852, Engineering News-Record.

CIVIL ENGINEER, 32, Reg. P.E. & L.S., 10 yrs. diversified experience. Heavy Construction, Dredging, Water Supply, Highways, Bridge Construction, Pile driving & Waterfront Work. Desires position as Job Engineer or Asst. Supt. with progressive, well-established firm in North or Central N. J. Employed at present, but available on 2 weeks notice. PW-1827, Engineering News-Record.

BUILDING CONTRACTOR'S Executive, 51, Prof. Engr. N. Y., Indiana, Illinois. Exceptional wide experience, Concrete, Masonry, Industrials, Housings and subaqueous Constructions; Proven Salesman, Estimator, Superintendance. Thoroughly familiar with N.P.A. and Governmental procedures, and contract administrations, will relocate. Chicago phone Briargate 4-6200, Apt. 507, Box PW-1824, Engineering News-Record, 520 N. Michigan Ave., Chicago, Ill.

STRUCTURAL ENGINEER 38, C.E. Deg. registered. Design and field exp. Now Employed. Desires position in N. Y. or Northern N. J. to combine Field & Office work. PW-1828, Engineering News-Record.

CONSTRUCTION MAN with Engineering and Construction experience wishes foreign construction or allied work. Experience includes grading, buildings, highways, and some railroad and airport construction. 15 years in Spanish countries, single, age 64, now employed. PW-1740, Engineering News-Record.

SUPERINTENDENT OR General Foreman. Excavations, roads, airports, heavy const. equipment. Fourteen years foreign experience, Latin America, Middle East, South Pacific. Efficient manager & producer. Now available. Box PW-1832, Engineering News-Record.

WORK WANTED

Electrical Engineer

Registered, specializing Industrial Plants wants work on fee or contract basis. Small staff available. W. B. Leland, Box 2671, Greensboro, N. C.

PATENT ATTORNEY

CONSULT: Z. H. POLACHEK

Reg. Patent Attorney, 1234 Broadway, New York 1, N. Y.

Building Construction Cost Data

1951 (9th) Edition

A 98-page booklet of tabulated construction costs revised as of January 1951. 1600 average spot prices alphabetically arranged and broken down for labor and material, plus 110 explanatory paragraphs. Concise. Comprehensive. *Up-to-date. Handy.* $2.75 Postpaid.

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Tel. STillwell 4-1030

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also
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Buildings, Bridges, and Power Houses 40 derricks and hoists—24 cranes available

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L.B.SMITH INC.

OFFERS

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Schramm 105 cubic foot gas powered compressor on 4 steel wheels.
Ingersoll-Rand 105 cubic foot, Waukesha gasoline power, on two rubber tires.
Gardner-Denver 160 cubic foot gas powered compressor on 4 steel wheels.
Worthington 210 cubic foot, two-stage, air-cooled, on steel wheels with Hercules diesel.
Pennsylvania 12" x 10" class 3A single cylinder, 355 cubic foot P.D., flat belt driven 50 HP slip ring motor.
Worthington two-stage, water-cooled, vertical 250#, 60 CFM, new condition.
Paving breakers, jackhammers, wagon drills, tie tampers.

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Cedarapids 2036 AAA unit with feeder, etc.
Cedarapids Jr. Tandem roll & jaw unit.
3033 Cedarapids Hammermill, Rebuilt.
10x7 Allis-Chalmers Blake type jaw crusher.
#21 Cedarapids Kubit impact breaker.
4' x 12' Tyler Niagara type 600, 3 deck.
4' x 6' Kennedy Van Saun single deck.
4' x 6' Kennedy Van Saun double deck.
42" x 24' revolving screen.
18" x 90' bucket elevator.
60-ton, 2-compartment, 8'x18' storage bin with clamshell gates.
Conveyors—18"—24"—30"—36". Also belt.

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1½-ton Ford with any body.
2½-ton GMC, rebuilt.
1945 White Model WC26 dump trucks, new condition.
2000-gallon tanks on semi-trailer mounting.
New and rebuilt dump bodies.
2,000 gallon tanks on semi-trailer mounting.

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1½ KW to 125 KW, alternating and direct current, gasoline and diesel powered.

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Buda, Hercules, Hill diesels, rebuilt.
New and rebuilt Murphy diesels, ME-4 & 46.
GM 6 and 12 cylinder diesels, practically new.

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Bucyrus-Erie 37B shovel and crane.
L-41 diesel powered ¾-yd shovel, rebuilt.
Lorain 55B gas powered crane.
Brownhoist 1-yd. gas shovel and crane.
Universal truck crane.

SHOVEL & CRANE ATTACHMENTS

Lorain 40A shovel attachment complete.
P&H 203 shovel attachment.
Chain crowd Lorain 30A shovel attachment.
Lorain 40 Hi-Lift shovel attachment.
Bucyrus-Erie 1½-yd. rock bucket.
Lorain 80-820 fairleads.

Backhoe Buckets & Attachments

Lorain 41 hoe attachment complete. New.
Lorain 30 hoe attachment complete.
¾-yd Lorain, 40, LBS #6105, 44" cutting width.
28" outside width solid bottom type LBS #4377, good condition.
¾-yd Amsco 40" cutting width, LBS #8101.

CLAM—DRAG—SCRAPER BUCKETS

NEW TAGLINES

McCaffrey Model 848 for 1¼ to 2-yd crane.
McCaffrey Model 636 for ¾-yd to 1-yd crane.

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Lorain 41, ¾-yd. LBS #8600, rebuilt.
New Lima 1-yd, Amsco, LBS #2295.
Bucyrus-Erie 1¼-yd gas air, LBS #3782, fair.
Lorain 75B, 1½-yd. manganese bucket, LBS #8538.
Lorain 75B, 1¼-yd extended lip, 1¾-yd LBS #2260.
Pettibone-Mulliken 2-yd Lorain 82 or 820, manganese, LBS #5381.
Pettibone-Mulliken 2-yd for 3500 Manitowac LBS #5763.
Esco 2½ yd cast weld dipper with bail & teeth

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Jaeger type "L" double screed, 10½'-12½', rebuilt.
Heltzel 10'-12' finisher, rebuilt.
Blaw-Knox gas-electric 10½'-12½', rebuilt.
2 Koehring 10'-12', rebuilt.

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1220'—Heltzel 9"x8" forms with stakes.
1430'—Heltzel 10"x8" forms, with stakes.

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R.B. Fine Grader for 21' width, rebuilt.

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Cleveland formgrader, new 1944, rebuilt.
Carr formgrader, new 1944, rebuilt.

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Sanderson-Cyclone #42 well drill, new.
Sanderson-Cyclone #44 well drill, new.
Bits—Stems—Bailers—Sockets—Etc.

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New Layne Bowler type 18 deep well pump.
Used and rebuilt pumps, all sizes, gasoline, electric or diesel.

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New Warco D78 tandem driven grader, 12' blade, V-type scarifier, 13.00x24 tires all around, 24,500 lbs., International UD14A diesel engine.
Austin Western 77 tandem drive, scarifier, 12' blade, gas power, hydraulic controls.

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L.B.SMITH INC. CAMP HILL, PA. SUBURB OF HARRISBURG

WE OWN THE EQUIPMENT WE ADVERTISE

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IMMEDIATE SHIPMENT

UNIT CAPACITIES—10 TO 1875 KVA

A.C.—50 AND 60 CYCLES

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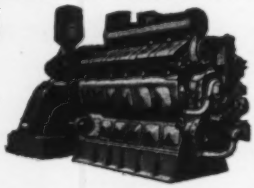

A PARTIAL LISTING OF OUR INVENTORY

KVA	Make	Model	HP	RPM	KVA	Make	Model	HP	RPM
1875	Fairbanks Morse	33F16	2000	300	375	Enterprise	DSG-6	450	450
1420	Fairbanks Morse	38D8¼	1600	720	330	Superior	KNA	396	514
1250	General Motors	16-278A	1600	720	312	General Motors	8-268A	450	1200
937.5	General Motors	12-567	1080	720	312	Clark	MD-4	375	327
625	Alco	6-12 1/4x13T	750	600	125	General Motors	3-268A	150	1200
425	Baldwin	VO-6	510	450	75	General Motors	6043C	90	1200
400	Buckeye	80	480	600	62.5	Int'l Harvester	UD-18	76	1200

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Adnum Pavers (converted to stone spreaders), machines in nearly new condition, spread to 12 ft. Location New Jersey.

Mentes-Williams Stone Spreader, used two weeks, spreaders 0 to 10 ft. in width. Location New Jersey.

Three Wheel 10 Ton Galion, Buffalo-Springfield and Huber rollers, gas or diesel engine.

Tandem 10 to 12 Ton Galion rollers, gas or diesel.

Four Le Tourneau, model W Scrapers, all in good condition, two rebuilt since last use, 2400x29 tires 75% or better. Location New Jersey.

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WHitehall 3-1055

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60 CFM INGERSOLL (Gas) 2 Pneu
60 CFM CHICAGO (Gas) Skids—2 Pneu
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Stationary—Portable
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All sizes—All makes

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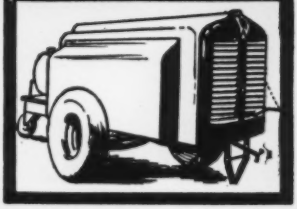

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Northwest #6 1½ yd Diesel Shovel. New 1949.
Northwest #6 1½ yd Diesel Shovel/Backhoe.
P&H 255A 20 Ton Truck Crane. Excellent.
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Lorain 820 Diesel Drag. 70' boom.
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P&H 855, 2 yd. Diesel Shovel.
Link-Belt K-520, Diesel Shovel, 3 yds.
Link-Belt K-595 Dragline, 2½ yds. Diesel.

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Erie 492 barrels cement 160 yd. agg. Complete.
B-K 450 barrels cement 100 Ton agg. Complete.
Butler 100 ton 3 compt. agg. 3 yd. batcher.
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B-K 400 Bbls. Cement, 125 Tons Agg. Complete.
Aggre. 150 yd. 3 compt. bin. Butler 1 yd. batcher.
B-K 110 bbl. bulk cement bin Richardson scales.
Agg. bin steel 3 compt. 150 yds with Butler 1 yd Batcher.

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Hetherington-Berner Heavy Duty Mote-Paver.
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Cedar Rapids Travel Mix Plant 100-150 tons.
B-G Model 848 "Travel Plant".
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Littleford 1000 gal. Distributor on Int. Truck.

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Steel 35' stiff leg derrick 100' boom.
American 20 ton stiff leg derrick 90' boom.
Stiff leg derrick 15 ton 100 ft. boom.
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Koehring 34-E Twin Batcher Paver.
2 Ransome 34-E Dual Drum Pavers Diesel.
Rex 28-S Builders Mixer, Elec. New 1947.
28-H Ransome Builders Mixer. Elec.
Koehring 56-S stationary Mixer. New '50.

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Blaw-Knox and Heltzel 8100 ft. 9"x9"; 10,000 ft. 8"x8" and 3000 ft. 10"x8".

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Complete span of pipelaying equipment including: 5—D7's w/side booms, 3T12,-000 series, no more than 500 hrs. on each. 2—D7's w/angle dozers. 2—D6's w/side booms, 9U1100 series 700 hrs. Four backhoe machine ⅜ yard capacity. Cleveland 140A Trencher, Rollers and so forth.

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STORAGE BATTERY

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1½ to 10 Ton — 18" to 56" Track Gauge

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45 TON GANTRY CRANE

Model 200 Colby, 110 ft. boom, 24' track gauge, 25 ft. gantry

30 TON GANTRY CRANE

Model 685 American, 90 ft. boom, 14' track gauge, 12 ft. gantry

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COMPRESSOR: Worthington 2 stage, 29/18-½ x 21, 600 H.P. syncaronous motor, 3 phase, 60 cycle, 440 volt, 180 RPM, cap. 3000 CFM, 100 lbs. pressure, complete with auxiliary equipment. In operation now, available immediately. 1—Worthington 15—9-½ x 12", cap. 700 CFM @ 100 lbs., direct connected to 440 volt, 125 H.P. synchronous motor, with all auxiliary equipment.
BOILERS: 2—Erie City, self-contained, Economic type, 125 H.P., oil fired, 150 lbs. pressure, built 1944, like NEW.
BOOT BUCKET ELEVATORS: 2—83 ft. ctr., manganese steel ch., buckets 18" wide.
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BLAST HOLE DRILL: Bucyrus Erie 27-T, diesel, 6⅝" bits.
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DIESEL MOTOR: 122 H.P. Caterpillar D13-000 complete with clutch, V-belt pulley and spare parts.
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100 ton and 25 ton Derrick Scows
American Receivers, models R-25-50 ton Capy, model R-10, 30 ton Capy
Manitowoc, Models 2000B-3500 and 4500
Lima, model 1201-60 ton Capy steel erection Crane for sale or rent
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Portable—2-Stage

1—315 Ing. Rand Mdl. 370-A-100, 4 cyl. Mdl. 4-115-LA gas eng. Waukesha. 4 steel wheels. Good condition. **$2.500.**

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1—100 ton Blaw Knox Model P-3100 three compartment batch bin. With 1½ yd. #63B weigh batcher. For rental only. **$425.00 per month.**

1—21 ton C. M. C. 2-compartment bin with 26 cu. ft. sliding weigh-batcher. Excellent condition. Price **$1,350.00.**

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4—75 HP 3/drum American elec. hoists. 3/60/220/440. $6,000 each.

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—LIKE NEW—

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1—25 ton Industrial Brownhoist Type G 40-50-60' boom, 1946 Nat'l. Board Boiler 150#. **$16,000.00.**

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2—56S Koehring stationary concrete mixers, 40 H.P. G. E. squirrel cage motors, 220/440/60/3. **SPECIALLY PRICED.**

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For rent—cranes, draglines, backhoes, buckets, and all other accessories.

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Price ea. $4200.00

1—Joy 315' Model WK80 Compressor on pneumatic tires, Diesel powered.

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100 Tons	12" BP	53#	40'	In Stock
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WE ARE NOW BOOKING ORDERS FOR H BEAMS AND BEARING PILES FROM 6" TO 12" IN ALL WEIGHTS.
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100 Tons Larssen I Steel Sheet Piling 46'
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676 ft. Worthington, 2 Stage, 440 V.
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50 TON ELEC. GANTRY WHIRLEY CRANE

1—Washington 120 ft. Boom. 24'4" Track Gauge.

4 FT. CONE CRUSHER

48 in. Telsmith Gyrasphere Crusher.

3 LIMA 1201

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BULLDOZERS TD-18 & TD-14, fully rebuilt
LORAIN 820 Diesel 2 cy Shovel, 1948
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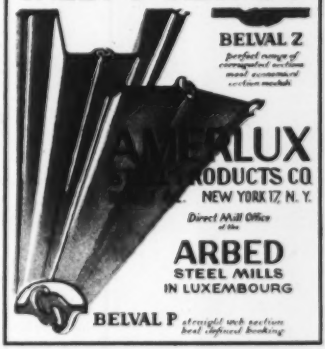

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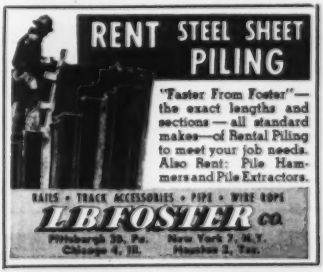

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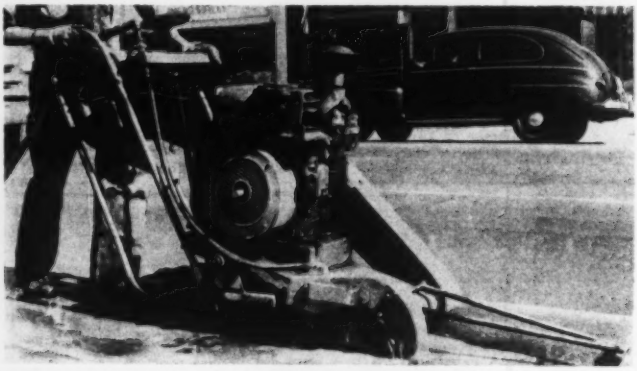
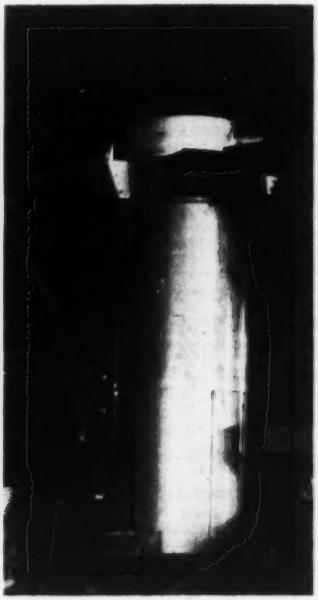
Now available as a package is the Caterpillar DW10 Tractor and the 10S Bulldozer which has been specially designed for it. As is the case with the other Cat 'dozers, the component parts are blade, push arms and braces, hitch, sheave supports, radiator guard and a combination cable-and-sheave groups. Trunnions on this new model, however, are supported in the weigh box and frame group, which box accommodates four counterweights totaling 7,000 lb. These are required to provide extra traction on the DW10's driving wheels. The counterweight box has a towing hitch so that the tractor can also be used for drawbar purposes. CATERPILLAR TRACTOR COMPANY, PEORIA, ILLINOIS.



Wet-cutting concrete saw

Pictured above is the Clipper Model C 130, a gasoline-powered, concrete-cutting saw which apparently isn't affected by the 3½ inches of asphalt it's cutting through. A screw feed controls vertical movement and an adjustable depth lock can be pre-set to prevent unnecessary overcutting. Front section of the blade guard is hinged and may be lifted for cutting curbing or piping. Manufacturer says it will cut a 1-in. deep slot in concrete at a rate of 10 ft per minute; through asphalt at 12 ft per minute. Another trick they claim is easily done with this rig: pour continuous highway and streets and later cut out contraction joints. The 12-in. blade will cut to a depth of 4 in.; the 18-incher as deep as 6¼ in. CLIPPER MANUFACTURING COMPANY, 2800 WARWICK, KANSAS CITY, MISSOURI.



Self-contained heating units

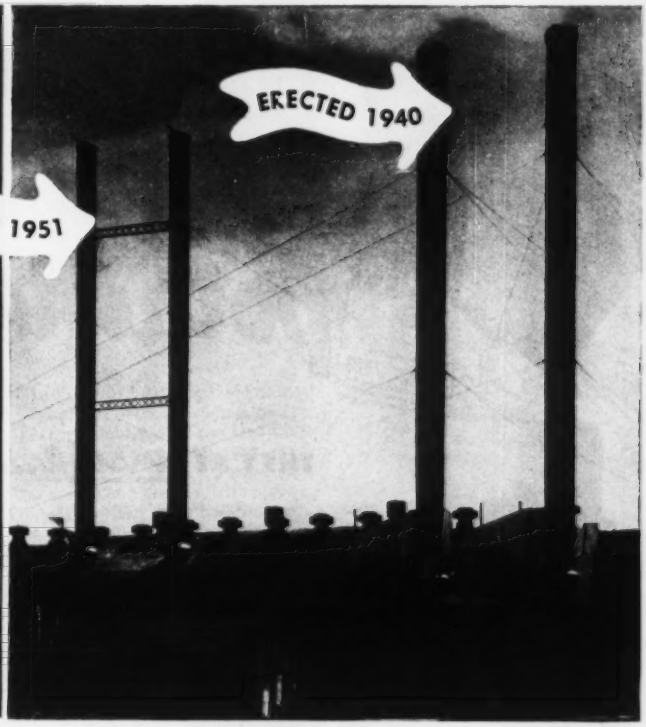
Called Thermoblocs, provide controlled temperatures under field and shop conditions. Complete with fuel tanks and mounted on easily-moved trucks, they are available with heat output ranging from 100,000 to 300,000 Btu per hour. Taking in cool air at the bottom, it discharges it horizontally overhead. They're built to accommodate either a gas- or fuel-oil burner interchangeably. When fitted with recirculators they can produce temperatures of 400 to 500 degrees F for drying towers and the like. PRAT-DANIEL CORPORATION, 9 MEADOW STREET, SOUTH NORWALK, CONNECTICUT.

Plastic mortar pan

The lightest pan we've heard of is a new plastic model called "EVEN-KEEL", which weighs only 4 lb as against the usual 16- and 18-pounders. Weight for weight it's stronger than steel, says the manufacturer, and measuring 20 by 29 x 7 inches, it has a capacity of 2.4 cubic feet. The pans contain no rivets, no folds, since they're made in a one-piece, seamless molding. They won't rust, certainly, as do their metal counterparts, and the maker says they won't sag, dent or corrode, either. Because of the high degree of resiliency in reinforced plastic, it's easy to remove left-over mortar. Just flex the upturned tray and the

(*Continued on page 137*)

BYERS WROUGHT IRON



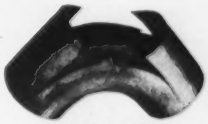
When engineers of the Morton Salt Company, Rittman, Ohio, made plans recently to erect two new stacks, they had the finest guide for selecting a durable material that anyone could ask—two genuine wrought iron stacks installed by the company in 1940 and still in excellent condition.

Basing the specifications for the new stacks on the service records of the old, the engineers selected genuine wrought iron. The new stacks, 5-feet, 6-inches by 140-feet, were fabricated from $\frac{5}{16}$ and ¼-inch Byers Wrought Iron plate by the Dover Tank and Plate Company.

Unlined metal stacks face severe corrosive conditions. Carbon dioxide is always present as a combustion product, and some sulfur compounds are generally encountered. When these are dissolved in condensed moisture, a dilute acid is formed which causes severe damage to vulnerable metals. Even when initial conditions are not severe, foresight suggests the use of durable material. For the aggressiveness of attack may be aggravated at any time, by the change of fuel, by the use of economizers or steam-jet draft inducers, or by intermittent operation.

Byers Wrought Iron is a veteran in stack service, and engineering records provide convincing evidence of its superior durability. How the unique character of this material is helping others combat flue gas corrosion is explained in our bulletin, WROUGHT IRON FOR FLUE GAS CONDUCTORS AND COAL HANDLING EQUIPMENT. It may help you . . . so write for a copy.

A. M. Byers Company, Pittsburgh, Pa. Established 1864. Boston, New York, Philadelphia, Washington, Atlanta, Chicago, St. Louis, Houston, San Francisco. Export Division: New York, N. Y.



WHY GENUINE WROUGHT IRON LASTS

This notch-fracture test specimen illustrates the unique fibrous structure of genuine wrought iron—which is responsible for the high corrosion resistance of the material. Tiny threads of glass-like silicate slag, distributed through the body of high-purity iron, halt and disperse corrosive attack, and discourage pitting and penetration. They also anchor the initial protective scale, which shields the underlying metal.

BYERS

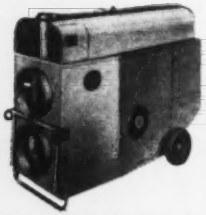
CORROSION COSTS YOU MORE THAN WROUGHT IRON

WROUGHT IRON

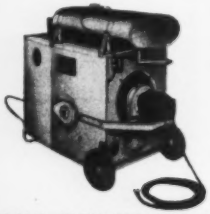
TUBULAR AND HOT ROLLED PRODUCTS

ELECTRIC FURNACE QUALITY ALLOY AND STAINLESS STEEL PRODUCTS

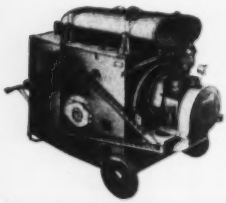
I find I can't afford cheap portable heaters



HERMAN NELSON DE LUXE I
Capacity 280,000-450,000 BTU/hr.
Completely automatic, including temperature control.
Fresh air delivery 2,000-2,350 c/m.
Electric motor powered.

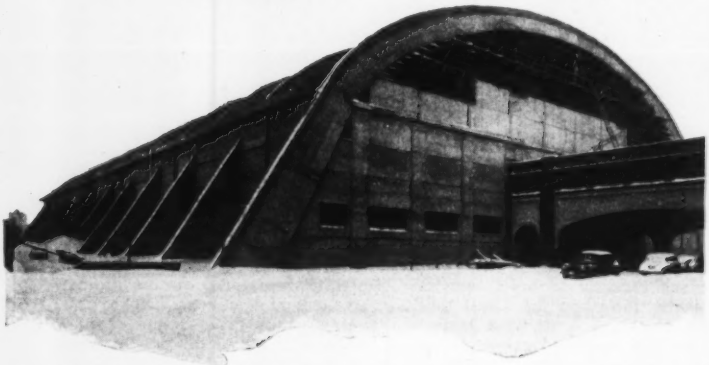


HERMAN NELSON ECONOMY MODEL
Priced lower for smaller jobs.
Capacity 125,000-190,000 BTU/hr.
For 115/230 volt A.C.
Costs but 19¢ per hour to operate.



HERMAN NELSON STANDARD MODEL
Capacity 250,000-385,000 BTU/hr.
Gasoline engine powered.
Completely self-contained.
For areas lacking electricity.

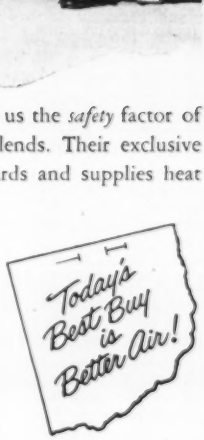
THEY'RE *unsafe*... AND TOO COSTLY!



THIS isn't double talk. Top construction men tell us the *safety* factor of Herman Nelson portable heaters pays real dividends. Their exclusive "sealed flame" feature eliminates fire and fume hazards and supplies heat that's "fresh air" clean.

Play safe on this winter's construction jobs. Quick, clean, *safe* heat from Herman Nelson portable heaters will cure those job lags and make man hours more productive.

Make a deal now with your nearest Herman Nelson dealer—while he can supply you without a long wait. For his name just write to Dept. EN-9 at the address below.



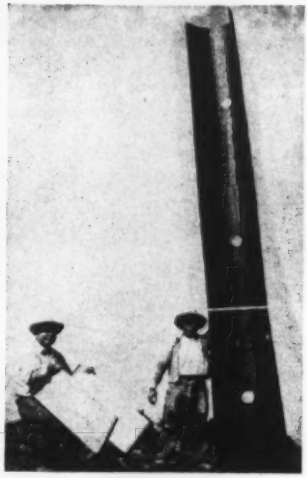
AAF herman nelson

HERMAN NELSON

Division of **AMERICAN AIR FILTER COMPANY, INC.**

MOLINE, ILLINOIS

dry mortar will fall away. American Cyanamid Company, 30 Rockefeller Plaza, New York 20, N. Y.



Portable flumes

While workmen are doing their chores in Hawaiian cane fields, it's important that irrigation waters be channeled around them. For this they have always used concrete chutes three feet long, butting several together whenever necessary to make an extended runoff. The old order changeth, however, even in the cane fields. Now they use 15-ft long plastic sections which weigh only 24 lb and can readily be handled by one man, as the picture above shows.

Only ⅛ in. thick, it is manufactured in flat sheets which are then formed into a semi-circular shape for fluming. Rated to last 10 years, it can be undoubtedly put to many other in the civil engineering and construction fields. It's made by the Panelyte Division of St. Regis Paper Company, Trenton, N. J.

Standard mix tables for perlite concrete

The Perlite Institute has completed a series of five recommended standard mixes for light weight insulating perlite concrete. With these tables, as an example, an architect desiring a "k" factor of .93 (thermal conductivity) can determine what wet density, as poured, will develop the desired insulation value. A contractor can determine proper mix of cement,

(Continued on next page)

BUILD with less steel... save time and manpower, too

with LIGHTWEIGHT, insulating PERMALITE aggregates

Industrial buildings, schools, hospitals, defense housing, military buildings – all can be built with *less vital* steel. Lightweight Permalite in place of sand in concrete and plaster will reduce the dead-load of a building as much as 80%. Less steel is needed to support this lighter weight concrete and plaster.

Lightweight Permalite/concrete and plaster are easy to handle – quick to apply. With Permalite, rigid completion dates can be set and met!

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Can be monolithically poured or precast into blocks, slabs and panels – can be sawed or nailed!

PLASTER: *Fireproofing*—speedily applied over structural steel.
Interior Walls – replaces sand plaster – at less than half the weight.

see our CATALOG in

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For KNOW HOW • ENGINEERING • SUPERVISION • EQUIPMENT • to keep jobs DRY

The Stang System has proved its efficiency and economy on both large and small jobs all over the United States. Stang engineering and supervision in planning, installation and operation insures a DRY JOB at all times.

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M & H Mechanical Joint
IBBM AWWA Gate Valve

Purchase price (or first cost) of a valve is not its real cost. Maintenance engineers appraise the true cost of a valve as cost per year of service—i.e., purchase price plus maintenance costs divided by years in operation.

On that basis, M & H likes comparison because M & H Valves are designed to last longer and entail little or no maintenance cost. Sizes 2 to 30-inch, with all end connections, including Mechanical Joint as shown.

Installing M & H Mechanical-Joint Valves into an existing pipe line is easily and quickly done by common labor with Mechanical Joint Cutting-In Sleeves. The job of regular inspection and maintenance of fire hydrants is also greatly simplified if auxiliary valves are installed for each hydrant, and an M & H Mechanical-Joint Valve makes such a job an easy one.

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M & H VALVE
AND FITTINGS COMPANY
ANNISTON, ALABAMA

M&H P... Everywhere

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NEW CONSTRUCTION AND REPAIRS
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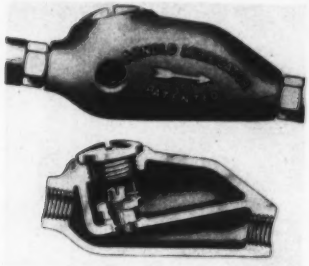
New Products . . .

perlite, water and air entraining agents, and order supplies accordingly for his particular pour. Designers can tell in advance what the weight and compressive strength of dry concrete will be. Copies of the chart are available upon request. PERLITE INSTITUTE, 35 WEST 53RD STREET, NEW YORK 16, N. Y.



Pneumatic tool line lubricator

Here's a good way to circumvent the the forgetful pneumatic tool operator and add to your maintenance efficiency. This lubricator, when placed on an air line will deliver "oiled air" to the working parts of the tool, says its manufacturer. Oil flow can be adjusted, and added under line pressure if desired. A pressure-proof window tells you at all times how much oil is in the lubricator. Said to cause no perceptible drag, its shape allows it to be pulled around corners without catching. No. 2 model shown above weighs 32 oz, is 7 x 3½ in. Three other sizes range from 4½ to 10 in. in overall length and from ⅛ to a full pint capacity. THE RUCKER COMPANY, 4228 HOLLIS STREET, OAKLAND, CALIFORNIA.

Ignition protective spray

With cold, damp weather not so far off, the old bugaboo of hard starting in automobile and truck engines won't be feared quite so much. According to its maker, a quick squirt or two of "Shortstop", an ignition spray in an aerosol can, will do the trick and seal the ignition against moisure for several months. Application from one of these self-spraying aerosol cans is quick, easy and clean. It's available in 3 oz size for glove compartment or tool box; in 12-oz cans for the shop. ZACO LABORATORIES, 1360 WEST 9TH ST., CLEVELAND 13, OHIO.

(Continued on page 140)

"Your Rammer is the Answer to a Contractor's prayer"

...writes

G. L. "Bud" Plant, Contractor,
SALT LAKE CITY • UTAH

SELF-CONTAINED
PORTABLE
ONE MAN OPERATION
FASTER COMPACTION
BETTER COMPACTION
LOWER INITIAL COST
LOW OPERATING COST
EASY TO USE, SAFE!

"THE engineers picked an area with a clay material on which no one had been able to get satisfactory compaction without bringing in select material to mix with the clay," writes G. L. "Bud" Plant, Salt Lake City contractor, in reporting on current construction of an ordnance proving ground in Utah. He continues, "To make a long story short, the 10" lift with two passes was 97.5% compaction . . . *your rammer is the answer to a contractor's prayer* . . . we are putting in an average of about 200 cubic yards (compacted measure) per 9-hour shift per rammer."

If you are not already using the Barco Rammer for soil compaction work, find out about it today! Ask for the nearest Barco Distributor to give you a demonstration. Catalog and information on request. *Worldwide Sales and Service.* BARCO MANUFACTURING COMPANY, 1814K Winnemac Ave., Chicago 40, Illinois. *In Canada:* The Holden Co., Ltd., Montreal, Canada.

BARCO

"Pegson" Gasoline

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Sound powered
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Indoor and Outdoor Models
For permanent installation on industrial projects or temporary use on construction jobs. Minimum upkeep. Selective or common ringing and semi-selective or common talking.
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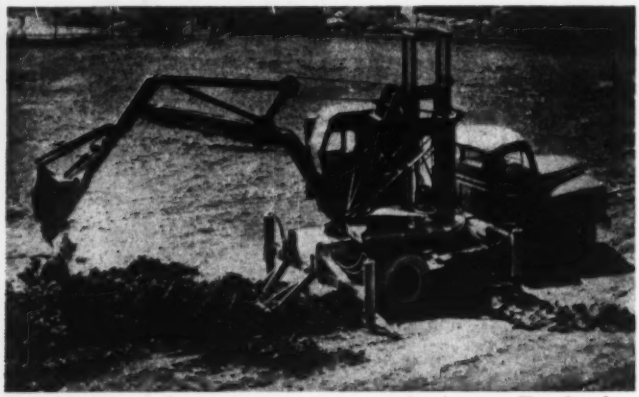
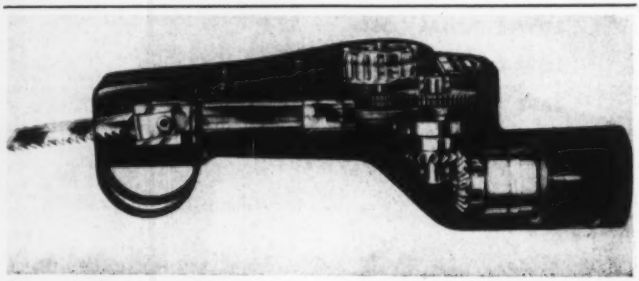
New products . . .



Truck-mounted hydraulic dragshovel

The Hydrohoe, a completely hydraulic dragshovel, features fraction-of-an-inch control; no bails, sheaves or drag ropes on the bucket; hydraulic ejector on the bucket; and quick changeability in the field to clamshell or crane. An hydraulic ram, located between the boom and dipper handle, supplies force for the primary digging action. A separate action comes with the telescoping of the boom; the combined action leaving a scallop-free cut. Test data from the manufacturer show that the telescope feature has made savings up to 40% in time taken to move up or relocate for better position. The hydraulic ejector on its 18-in. bucket is a far cry from the usual practice of snapping or jerking it to free sticky materials. Every work function is hydraulic, and controllable to a fraction of an inch. Maximum reach is 23 ft; effective depth over rear of truck, 12 ft 6 in. BUCYRUS-ERIE COMPANY, SOUTH MILWAUKEE, WISCONSIN.



New model Super-Saw needs no starting hole

The entire unit of this new model is sealed against grease leakage. In addition, a new grip has been added as well as a redesigned shank vise which the manufacturer says prevents slippage or chatter. The Super-Saw needs no starting hole, thus speeding up keyhole and other types of saw work. Merely hold it firmly against the material to be cut with the guide as a fulcrum, and rock it into an upright position. Then follow your guide lines as usual. A built-in blower keeps the motor cool and also blows chips and dust away from the cutting line. Power is provided by any heavy-duty ¼-in. or ⅜-in. drill, standard flexible shafts or by air drills. Overall measurement is only 10¾ in. For full particulars on its use in shops as well as in the field, send for catalog P 53. R. C. S. TOOL SALES CORP., JOLIET, ILLINOIS.

Fire-resistant wallboard

By combining unexpanded vermiculite and gypsum, a new wallboard has been produced with high fireproofing quality, usable for both commercial and residential construction. The wallboard comes in three thicknesses, ⅜, ½ and ⅝ in. Underwriters Laboratories Inc. has given a 45-min. fire rating on walls and ceilings for the ½-in.; 1 hr. for walls where the ⅝-in. stock is used on both sides of a load-bearing wood stud partition. It's applied like regular gypsum board. ZONOLITE COMPANY, 135 S. LASALLE STREET, CHICAGO, ILLINOIS.

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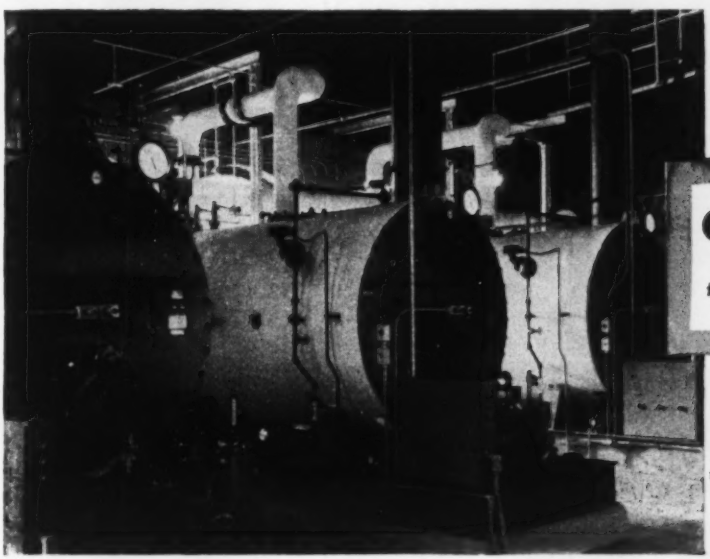

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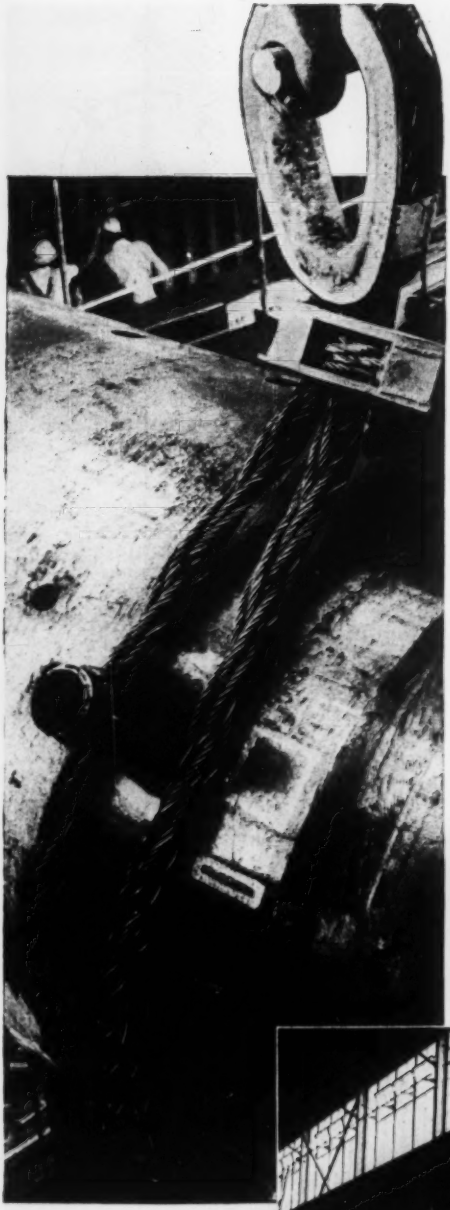

Here's the grip for the trip

Do your lifts consist of occasional difficult loads . . . or do you require a steady series of pickups engaging a minimum crew? In either case, flexible Yellow Strand *Braided* Safety Slings* will provide the right grip for the trip. And you'll be set to cut handling time, and to lower costs, as compared with the use of bulkier slings.

Patented *braiding* increases the pliability of stout Yellow Strand Wire Rope. A choker or basket hitch conforms readily to odd shapes, provides more security for unbalanced or slippery loads. Direct connections—via hook, thimble, shackle, socket or special fitting—are easily attached, owing to the relatively light weight and high kink-resistance of Yellow Strand *Braided* Slings. Send details of your application now for a recommendation by B & B engineers.

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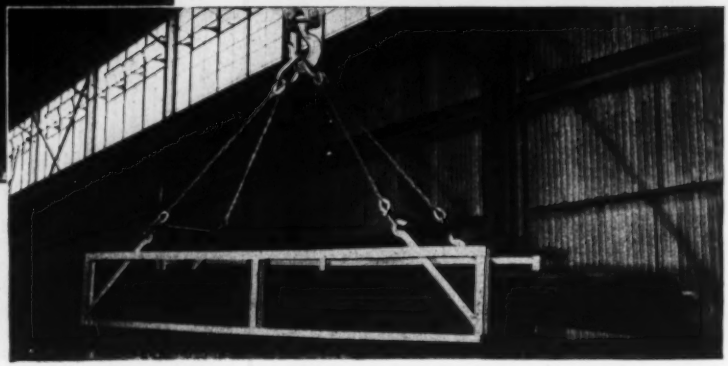
Branches: New York, Chicago, Houston, Los Angeles, San Francisco, Portland, Seattle *Factories:* St. Louis, Peoria, Houston, Seattle

BRODERICK & BASCOM
Yellow Strand
BRAIDED SAFETY SLINGS



*PATENTS, U. S., 1475856, 1934071, 2142641, 2142642, 2299569; CANADIAN, 333874, 399069

MANUFACTURERS' PUBLICATIONS

Return line anti-corrosives—All raw waters in return lines contain bicarbonates, and under boiler temperatures carbon dioxide may be passed out, leaving normal carbonates which are corrosive. This folder, a 4-pager designated as No. 5013, tells about two preventive treatments. Formula 700 dissolves in the condensate and reacts with carbon dioxide, preventing carbonic acid from forming. A new filming type amine, Formula 702, forms a continuous film in these return lines, coating them against both oxygen and carbon dioxide corrosion. Test procedures for both treatments are also included in the booklet. DEARBORN CHEMICAL COMPANY, MERCHANDISE MART PLAZA, CHICAGO 54, ILLINOIS.

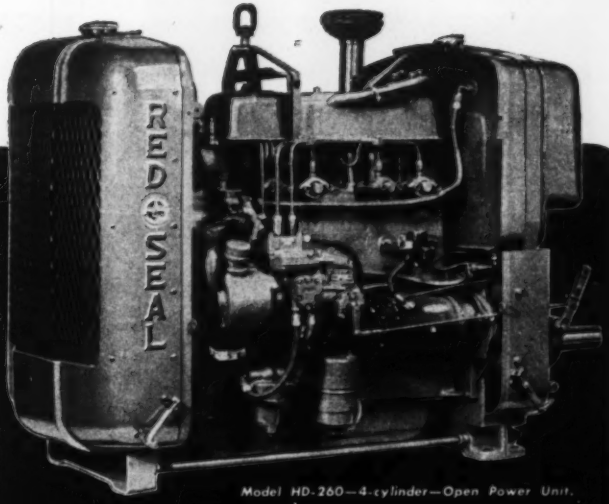
Alloy steels—their element effects, critical points, forging, machining, welding and thermal treatment are covered in Bulletin No. TDC 149. Help is also offered in solving problems involving use of alternate grades of low carbon or carburizing grades of tubing steels. THE BABCOCK & WILCOX TUBE COMPANY, BEAVER FALLS, PENNSYLVANIA.

Fireproof files—for your vital specifications, tracings and drawings are described in a new two-color, double-fold brochure which illustrates the fallacy of "fireproof" buildings. Entitled "How Safe Are Your Drawings", handbook SC 688 indicates increased danger to drawings under defense or war conditions. REMINGTON RAND INC., 315 FOURTH AVENUE, NEW YORK 10, N. Y.

Concrete cribbing—How it is made, its principal advantages and uses, typical sections, specifications and installation instructions are included along with several excellent photos of installations in this 8-page booklet. The manufacturer offers engineers and architects specific information on particular jobs upon receipt of information such as wall length and height, cross section, soil bearing power, kind of fill material, critical clearances, amount of water in fill and surcharge or superimposed loads. UNIVERSAL CONCRETE PIPE CORPORATION, COLUMBUS, OHIO.

Concrete floor finish—A mixture o tough aggregates, called "Monorock" when cast dry on concrete floors, pene-

(Continued on page 120)



Model HD-260—4-cylinder—Open Power Unit.
25 to 50 shaft horsepower for intermittent duty.
20 to 40 shaft horsepower for continuous duty.

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COST LESS TO RUN
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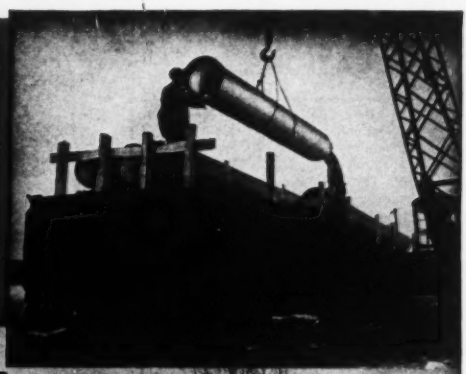
16" and UP



If your requirements call for transmission or distribution mains of 16" diameter or larger, Lock Joint Pipe Company can provide high quality concrete pressure pipe in all standard diameters and some intermediate sizes. Starting at a minimum of 16", Lock Joint Concrete Pressure Pipe is produced in 32 different diameters, and its four distinct types of structural design cover every working condition common to American water works practice.

Not only does Lock Joint Concrete Pressure Pipe qualify fully under A.W.W.A. specifications, but it alone embodies, in a conventionally designed pipe priced to meet competition, all the nine time-tested characteristics listed at right:

- **PERMANENT HIGH CARRYING CAPACITY**
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- **IMMUNITY TO RUPTURE OR BLOW-OUT**
- **SAFETY UNDER EXTREME EXTERNAL LOADS**
- **EVERY JOINT FLEXIBLE AND WATERTIGHT**
- **EASILY TAPPED**
- **SPECIALS TO MEET INDIVIDUAL SPECIFICATIONS**
- **USEFUL LIFE CONSERVATIVELY ESTIMATED AT 100 YEARS**
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Automatic screw machines—are described in detail, especially the Cleveland Model AB single spindle automatic. It features 112 spindle speed selections from 24 to 1,820 rpm, change of gears without removal of nuts, extra chip capacity and easy chip removal, and independent cutoff. It can be changed from a bar machine to a chucker in 30 minutes by substituting a simple chucking attachment for the bar feed assembly in the spindle. THE CLEVELAND AUTOMATIC MACHINE COMPANY, CINCINNATI 12, OHIO.

Truckers' tips—GMC dealers are distributing a new booklet to truck owners titled "Tips to Truckers In the Emergency". It contains advice on preventive maintenance; what to do, when to do it, and where to obtain parts and accessories. It contains also some homespun parallels, such as comparing too much free travel in a clutch to too long a rope on a dog. Excess in either case may lead to trouble or damage. GMC TRUCK AND COACH DIVISION, GENERAL MOTORS CORPORATIONS, PONTIAC 11, MICHIGAN.

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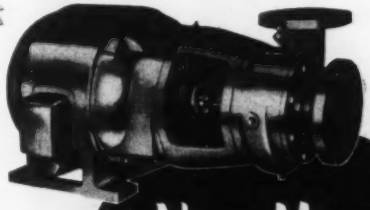

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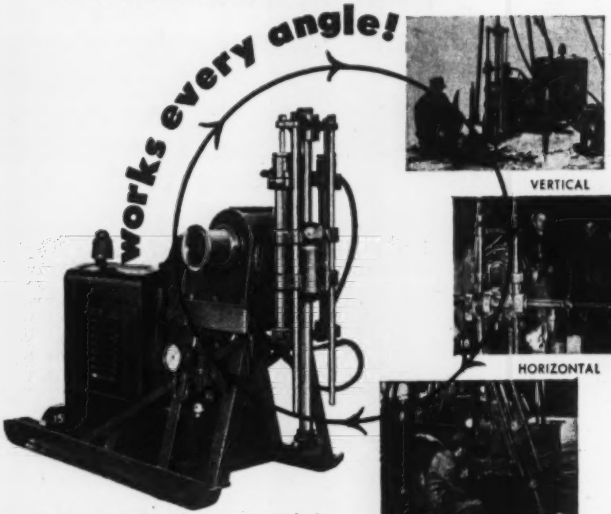

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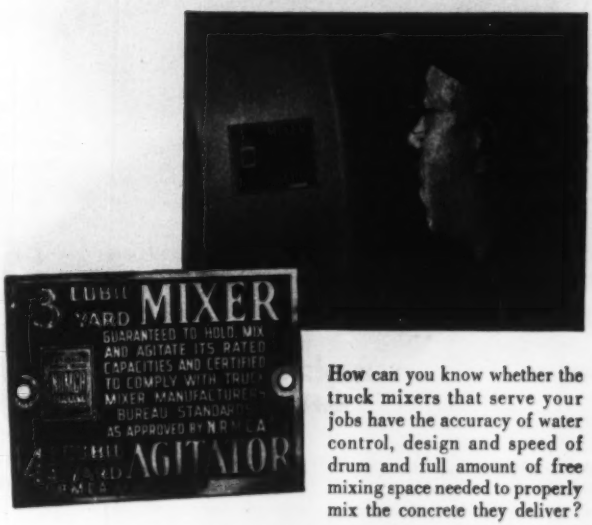
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On separate contracts, blueprints and specifications exceed . . . .

Separate versus single contract

An essay discussing how to make a mountain of a mole hill

At latest count approximately half a dozen states have sewn themselves in on the question of separate contracts. No more contracts with general contractors, they say, and recite the classical reason: Economy.

But separate contracts can be a lesson both in visual education and those judgment factors made known by Justice Holmes as "interstitial differences".

Since some six states, and (for a time) the Veterans Administration have gone this road, perhaps it is now well to see what has been the result and just how much money has been saved.

• **No valid comparison**—On questioning officials (with a promise of anonymity for their replies) it has become apparent that most of the laws of these states as written do not actually allow a valid comparison between the two types of contract. No single bids are called for within most of the laws as written and so that is that. The line-up of the states includes New York, New Jersey, North Carolina, Pennsylvania and Arkansas.

The states have various requirements in their laws which seem incidental. Ohio, North Carolina and Arkansas make the separate contract requirement obligatory on jobs over $10,000. New York has a higher minimum at $25,000 and both Pennsylvania and New Jersey are busy with separate contracts on jobs over $1,000.

• **An extra cost**—But there seemed to be a feeling in some high places that, although there are times when separate contracts will show savings, actually state administrative costs often make up the difference under the new arrangement. And there is the problem of arriving at an efficient operating force under this disparate method of selecting working partners, some officials say.

The point was dramatically made at one interview when an official pulled out of his drawer two photographs showing the number of blue prints and specifications needed under separate as against single contract.

In discussing this matter he underlined the problem of building a team out of all the various contractors (general, plumbing, electrical, heating and cooling) signed up on the basis of low bidder.

Somewhere along the line the operations of these men need to be organized and since they must work together, they should get on together. But low bidders are not necessarily buddies, he said, and work delays can result from conflicting personalities, methods and viewpoints.

As a public official he would be glad to shunt this problem off to the general contractor under single contract where trade tie-ins, and people accustomed to working together usually arrive at a bid, and a team of workers is preselected in this fashion.

• **The jilted scream**—Of course there is another side to the story. Every so often one can hear screams from jilted subcontractors whose bids have been revealed by a general contractor to one of their competitors in order to obtain a lower bid following awards of the single contract. Electrical people in Chicago recently complained of this type of operation, and it has been the subject of much discussion in all quarters.

The ethics of the situation has been considered questionable for some time by the Associated General Contractors of America who certainly do not condone it. But as one observer put it, it takes two to make a deal. Any subcontractor encouraging or cooperating with a general contractor in such an operation is equally guilty of a breach of ethics. The problem does not lie just in the single contract situation, but in human nature.

• **A double standard**—But the ethical question is not confined to the contractor who shows the bid, or to the individual contractors themselves, but to both professions, and both trades. Competitive bidding under separate contract has made for more conservative estimates of completion dates and higher general bids, because even the winners cannot estimate their problems accurately since they do not know with whom they may be working.

Separate contract does provide procedural safety for all bidders, and all interested trades, but just where it leaves the public in view of obvious and hidden costs still is not clear.

Perhaps the best observation one can make is the fact that the Veterans Administration which once asked for bids under both types of contract letting is now asking only for single contract bids. (ENR Aug. 11, 1949, p. 21.)

. . . . those for single contracts.

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Close quarters, low hanging trees, pipes criss-crossing trench path . . . that made trenching a ticklish job for the hoe operator. And the crane operator's job was just as critical. Working in cramped space where boom couldn't be raised above cab top required exceptional control to place gas main sections under the small cross pipes.

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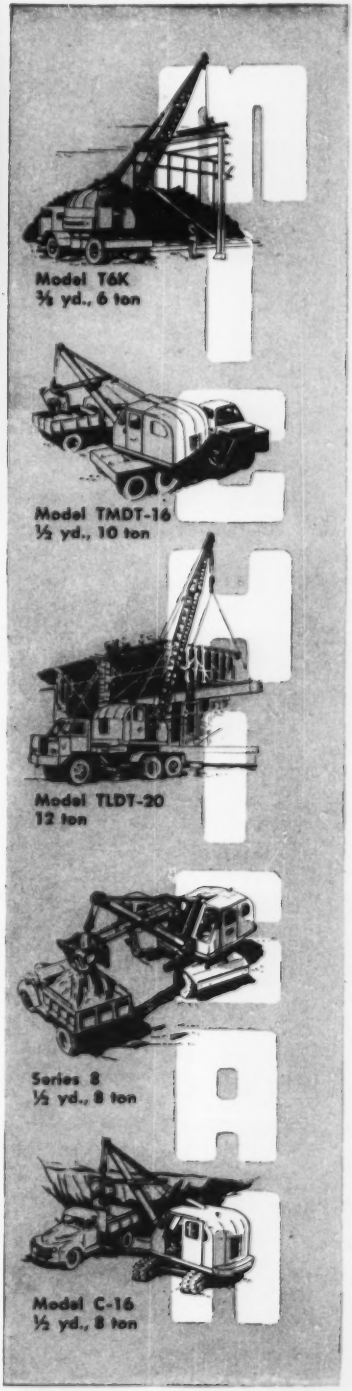

TIMKEN® bearings help new Gar Wood scraper make time on new turnpike

SHOWN here at work on the Western end of the Pennsylvania turnpike extension, these new model 625 Gar Wood scrapers are a big help in keeping the project moving along on schedule. Each one can dig, carry and dump a load of 25 cubic yards of dirt. Timken® tapered roller bearings in the wheels carry the heaviest loads, help keep the scrapers on the job with minimum time-out for maintenance and repairs. Pulling and pushing the scrapers are giant Allis-Chalmers torque converter tractors—each equipped with 50 Timken bearings in the tracks, final drives, bevel gear shafts plus other important applications.

Because of line contact between the rollers and races, Timken bearings have extra load-carrying capacity. The tapered construction of Timken bearings enables them to take both radial and thrust loads. Wheels and shafts are held in rigid alignment, reducing wear on moving parts.

The incredibly smooth surface finish and true rolling motion of Timken bearings practically eliminate friction. And more effective closures are possible because Timken bearings keep housing and shaft concentric. Lubricant is kept in; dirt and grit kept out.

No other bearing gives you all the advantages you get with Timken tapered roller bearings. Make sure they're used in the construction equipment you buy; specify bearings with the trade-mark "Timken" for the equipment you build. The Timken Roller Bearing Company, Canton 6, Ohio. Canadian plant: St. Thomas, Ont. Cable address: "TIMROSCO".

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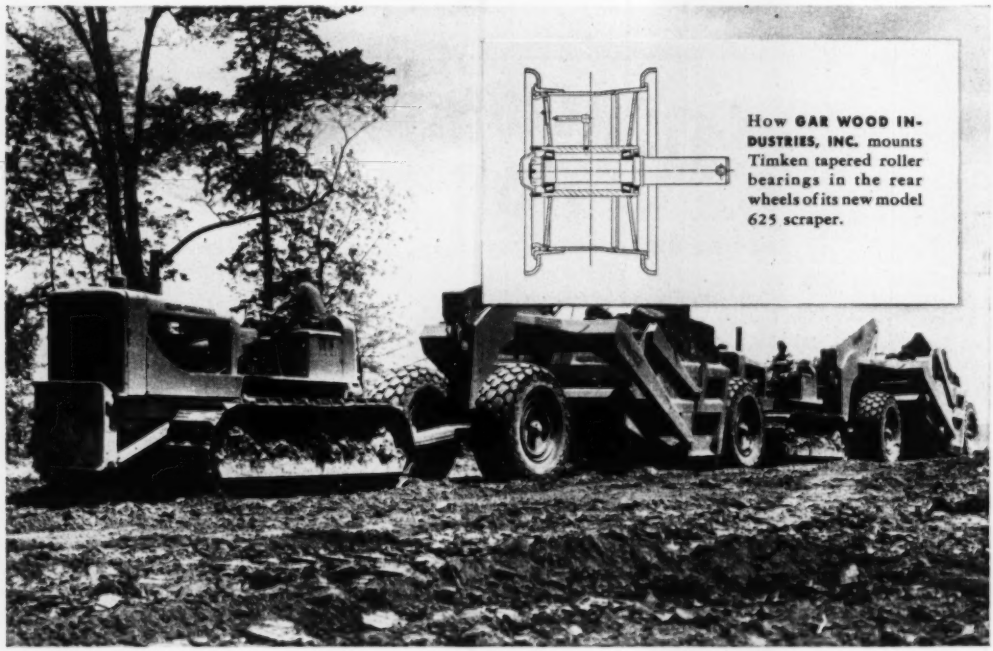
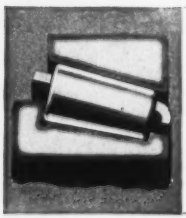


How **GAR WOOD INDUSTRIES, INC.** mounts Timken tapered roller bearings in the rear wheels of its new model 625 scraper.



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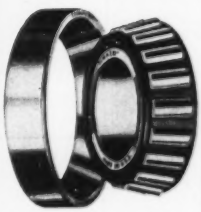

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